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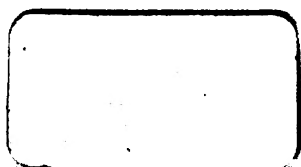
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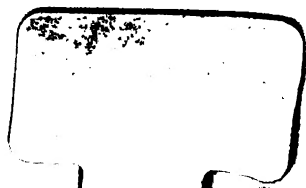
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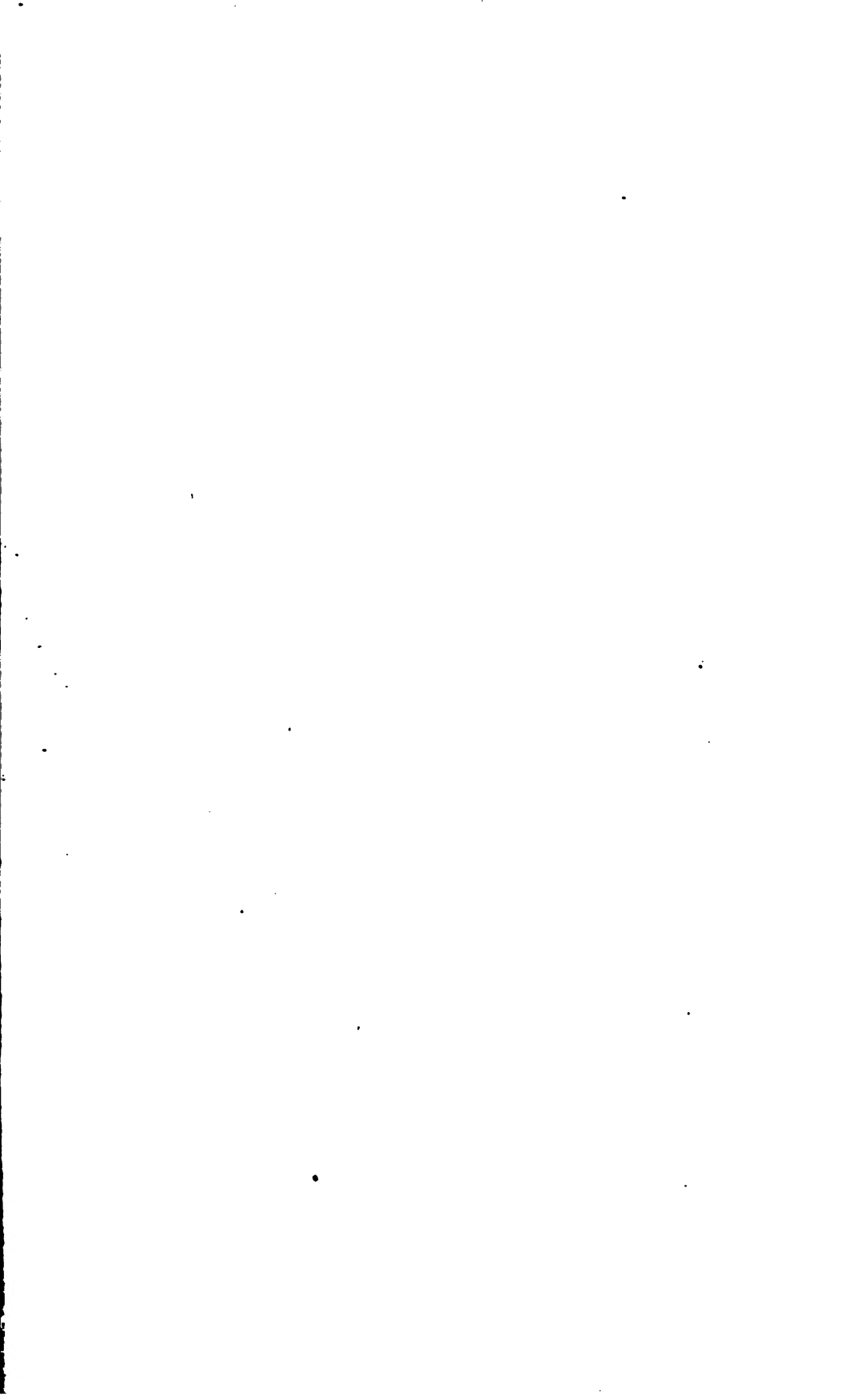


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SEP 3 1896







TRANSACTIONS
OF THE
MEDICAL SOCIETY
OF THE
STATE OF NEW YORK,
FOR THE YEAR 1896.



PUBLISHED BY THE SOCIETY.
1896.

DORNAN, PRINTER.
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CONTENTS.

	PAGE
Organization	1
I. Delegates	1
II. Permanent Members	2
III. Honorary Members	3
Officers and Committees	5
Members in Attendance at the Annual Meeting of 1896	6
Minutes of the Proceedings	11
Inaugural Address	11
Reports:	
1. Treasurer's Report	50
2. Report of the Merritt H. Cash Prize Fund	52
3. Report of the Committee of Publication	53
4. Report of the Committee on Legislation	53
5. Annual Report of the State Board of Medical Examiners	54
The Anniversary Address	57
Addresses:	
I. The Medical Education of the Future. By Charles W. Eliot, LL.D.	87
II. Deficient Excretion from Kidneys not Organically Diseased, and Some of the Diseases Peculiar to Women. By James H. Etheridge, M.D.	104
Communications:	
I. Discussion on the Present Status of the Surgery of the Brain:	
1. The Present Status of Cerebral Surgery. By Edward D. Fisher, M.D.	116
II. Discussion on the Present Status of the Surgery of the Brain:	
2. A Contribution to Brain Surgery, with Special Refer- ence to Brain Tumors. By M. Allen Starr, M.D.	119
III. Discussion on the Present Status of the Surgery of the Brain:	
3. Craniotomy for Idiocy and Imbecility. By Charles L. Dana, M.D.	135
IV. Discussion on the Present Status of the Surgery of the Brain:	
4. The Surgical Treatment of Epilepsy. By B. Sachs, M.D.	140
V. Discussion on the Present Status of the Surgery of the Brain:	
5. Brain Surgery in Epilepsy. By George Woolsey, M.D.	145
VI. Abdominal Surgery:	
1. Complications in Abdominal Surgery Requiring Intes- tinal Anastomosis. By A. Vander Veer, M.D.	156

	PAGE
Communications:	
VII. Abdominal Surgery:	
2. A Rare Complication of Appendicitis. (Pylephlebitis Suppurativa.) By Herman Mynter, M.D.	166
VIII. Abdominal Surgery:	
3. The Technique of the Improved Cæsarean Section. By Henry J. Garrigues, A.M., M.D.	171
IX. Abdominal Surgery:	
4. Vaginal Hysterectomy. By Willis E. Ford, M.D.	179
X. Abdominal Surgery:	
5. The Sloughing of Uterine Fibroids After Abortion and Labor. By Matthew D. Mann, A.M. M.D.	187
XI. Diseases of Intrauterine Life. By Egbert H. Grandin, M.D.	208
XII. Some Remarks on Uræmia and Eclampsia. By P. W. Van Peyma, M.D.	209
XIII. The Question of Puerperal Self-infection. By Charles Jewett, M.D.	217
XIV. Hysterical Tetany or Tetanoid Hysteria. By Grace Peckham Murray, M.D.	230
XV. Surgical Treatment of Retro-deviations of the Uterus. By Augustin H. Goelet, M.D.	243
XVI. The Surgical Treatment of Backward Displacements of the Uterus. By Hiram N. Vineberg, M.D.	250
XVII. Discussion on Syphilis in Infants and Young Children:	
1. The Diagnosis and Treatment of Early and Late Syphilis in Children. By George T. Elliot, M.D.	263
XVIII. Discussion on Syphilis in Infants and Young Children:	
2. The Pathology of Syphilis in the Newborn. By Ernest Wende, M.D.	283
XIX. Discussion on Syphilis in Infants and Young Children:	
3. The Nervous Manifestations of Hereditary Syphilis in Early Life. By B. Sachs, M.D.	293
XX. Discussion on Syphilis in Infants and Young Children:	
4. Early and Latent Syphilis in Infants and Young Children. By L. Duncan Bulkley, A.M., M.D.	300
XXI. Infection in the Newborn. By M. A. Crockett, M.D.	304
XXII. The Development of Muscular Atrophy on the Basis of Old Infantile Spinal Paralysis. By William Browning, M.D.	309
XXIII. Nitroglycerin in the Treatment of Sciatica. By William C. Krauss, M.D.	313
XXIV. Abscess of Frontal Sinus—Case. By P. J. Creveling, M.D.	317
XXV. The Equilibrium Function of the Ear. By Gaylord P. Clark, M.D.	319

	PAGE
Communications:	
XXVI. Some Notes on Trachoma. By Matthias Lanckton Foster, M.D.	330
XXVII. The Early Diagnosis of Tuberculosis of the Kidney. By Willy Meyer, M.D.	338
XXVIII. A Case of Nephrectomy with some Interesting Features. By C. W. Townsend, M.D.	344
XXIX. Congenital Dislocation of the Hip, with Presentation of a Case Cured. By T. Halsted Myers, M.D.	345
XXX. Neuritis Complicating Dislocations of the Shoulder and Elbow. By M. A. Veeder, M.D.	354
XXXI. How to Prevent River and Stream Pollution. By Thomas E. Satterthwaite, M.D.	360
XXXII. Drinking-water and Disease. By William P. Mason, M.D.	373
XXXIII. Shall the State Undertake to Restrict the Spread of Tuberculosis? By John L. Heffron, A.M., M.D.	383
XXXIV. Serum-therapy. By E. M. Wilson, M.D.	390
XXXV. The Symptoms and Diagnosis of the Indigestion of Starchy Food. By Reynold W. Wilcox, M.D., LL.D.	394
XXXVI. The Treatment of Oedema of the Lungs. By Louis Faugères Bishop, A.M., M.D.	402
XXXVII. Second Report on a Case of Functional Albuminuria. By Eli H. Long, M.D.	404
XXXVIII. Note on the Use of Permanganate of Potassium in the Treatment of Diseases of the Skin. By L. Duncan Bulkley, A.M., M.D.	405
XXXIX. Alcoholism and Public Health. By Henry R. Hopkins, M.D.	407
XL. The Treatment of Malignant Tumors in So-called Cancer Cure Institutions. By Nathan Jacobson, M.D.	419
XLI. A Medico-legal Note. By A. Walter Suiter, M.D.	427
XLII. Treatment of Fracture of the Patella with Continuous Extension and Without Confinement to Bed. By Joseph D. Bryant, M.D.	432
In Memoriam	437
Obituaries:	
I. Biographical Sketch of Dwight Morgan Lee, M.D. By D. A. Gleason, M.D.	438
II. Memorial of Judson C. Nelson, M.D. By Frank H. Green, M.D.	440
III. Memorial of Erastus D. Chipman, M.D.	442
Officers of the Society from its Organization to the Present Time	443
Officers, 1896	445
Members:	
I. Delegates from County Medical Societies, etc.	445
II. Permanent Members	447
III. Honorary Members	454

	PAGE
Members Ex-officio : Presidents of County Medical Societies . . .	455
Persons Eligible to Membership :	
I. Eligible to Permanent Membership	456
II. Eligible to Honorary Membership	456
County Medical Societies	457
Incorporated Voluntary Medical Societies	530
Appendix	537

NOTE.—The Merritt H. Cash Prize Essay on “Neuroses of the Stomach,” by Dr. A. L. Benedict, of Buffalo, which should have been printed in this volume, is of necessity deferred until the next issue of the TRANSACTIONS, because of delay in securing the copy.

MEDICAL SOCIETY

OF

THE STATE OF NEW YORK.

ORGANIZATION.

By an Act of the Legislature passed April 4, 1806, and subsequently amended, the Medical Society of the State of New York is organized as follows:

The Society is composed of delegates, permanent members, and honorary members.

I. DELEGATES.

Delegates are sent by county medical societies, certain medical colleges, incorporated voluntary medical societies, and by the New York Academy of Medicine. Each county medical society is entitled to as many delegates as there are Assembly districts in said county; they are to be elected by ballot at annual meetings of the societies. Each incorporated medical college, which, by its charter, may be represented in this Society, is entitled to one delegate; incorporated voluntary medical societies, which are admitted to representation, are entitled to one delegate each, and the New York Academy of Medicine to five delegates. No one can be admitted as a delegate who is not a member of a county medical society.

The organizations entitled to representation in this Society are required by its by-laws to pay to the Treasurer, for the use of the Society, five dollars annually for each delegate they are entitled to send; and no delegate is permitted to inscribe his name in the register, at the annual meeting, until the dues against the organization he represents have been paid.

The term for which delegates are elected is three years, and, as nearly as possible, one-third of the whole number is annually elected. The credentials of all delegates must be duly authenticated by the

seal of the organization which they represent, and the signature of the Secretary.

The following table exhibits the classification of counties, colleges, and incorporated societies, as respects the election of delegates, and shows the number of delegates to which each is entitled, and when the present delegations become vacant :

VACANT Jan. 22, 1897.	VACANT Jan. 22, 1898.	VACANT Jan. 22, 1899.
Albany 4	Allegany 1	Genesee 1
Cattaraugus . . 2	Broome 2	Livingston . . . 1
Cayuga 2	Chautauqua . . . 2	Montgomery . . . 1
Chemung 1	Chenango 1	New York 35
Dutchess 2	Clinton 1	Oneida 3
Essex 1	Columbia 1	Orleans 1
Fulton 1	Cortland 1	Oswego 2
Greene 1	Delaware 1	Schuyler 1
Jefferson 2	Erie 8	Seneca 1
Lewis 1	Franklin 1	Wyoming 1
Monroe 4	Herkimer 1	Yates 1
Niagara 2	Kings 21	College of Physicians and Surgeons of New York 1
Onondaga 4	Ontario 1	Long Island College Hospital 1
Orange 2	Madison 1	Niagara University Med. Department . 1
Otsego 1	Rockland 1	Medical Department of University of Buffalo 1
Putnam 1	St. Lawrence . . . 2	College of Medicine, Syracuse University 1
Queens 3	Saratoga 1	New York Post-Gradu- ate Medical School and Hospital . . 1
Rensselaer . . . 3	Suffolk 2	Rochester Pathological Society 1
Richmond 1	Ulster 2	Utica Medical Library Association . . . 1
Schenectady . . 1	Washington . . . 1	Society of Physicians of Canandaigua . 1
Schoharie 1	Wayne 1	Syracuse Academy of Medicine 1
Steuben 2	University of City of New York, Medical Department . . 1	
Sullivan 1	Bellevue Hospital Medical College . 1	
Tioga 1	Medical Association of Northern New York 1	
Tompkins 1	Elmira Academy of Medicine 1	
Warren 1	Practitioners' Society of Rochester . . 1	
Westchester . . 3	Medical Association City Mt. Vernon and Environs . . 1	
New York Academy of Medicine 5		
Albany Med. College . 1		
New York Polyclinic . 1		
Amsterdam Med. Soc. 1		
Long Island Med. Soc. 1		
Utica Medical Club . 1		
Total 59	Total 59	Total 58

II. PERMANENT MEMBERS.

Permanent members are elected at the annual meetings of this Society, the names of those eligible being presented by the Secretary upon application. Eligibility to permanent membership is secured

by service as a delegate for three years, and attendance and registry as such upon at least two annual meetings of this Society. Permanent members-elect must be active members of their county societies.

Each permanent member on his election is required to pay an initiation fee of five dollars, and also the annual dues of a permanent member for the year in which he was elected; failure to pay the initiation fee within one year after election renders the election void. Permanent members are required to pay annually five dollars to the Treasurer, for the use of the Society, and no permanent member is allowed to inscribe his name in the register, at the meetings of the Society, who has not paid his dues for that year, and all arrearages. All annual dues are payable at the beginning of the session of the annual meeting of the Society.

Only delegates and permanent members whose names are inscribed in the register are entitled to vote at the meetings of the Society.

III. HONORARY MEMBERS.

This Society may, at the annual meeting, elect eminent physicians from other States, or from foreign countries, as honorary members. They must have been nominated at a previous annual meeting, and those elected shall not exceed six in number in any year.

The Society may invite physicians who are present at any meeting to take seats as guests, but no physician of this State shall be so invited who is not a member of a county medical society entitled to representation in this Society.

Honorary members and invited guests have the privilege of a seat at the meetings, and of presenting papers, and of taking part in discussions, but they shall not vote on any question nor be eligible to any office. Papers presented by them require a special vote by the Society, of reference to the Committee of Publication, in order to appear in the published *Transactions*.

MEETINGS.

The annual meetings of the Society are held in the city of Albany, on the last Tuesday in January in each year, and other meetings at such time and place as may be determined by a majority of the Society convened at any legal meeting. Fifteen members constitute a quorum for the transaction of business. The Society may, at its pleasure, change the time of holding its annual meeting, in accordance with the provisions of Chapter V., Laws of 1876, being an "Act to enable the Medical Society of the State of New York to alter the time of holding its annual meeting."

SENATORIAL DISTRICTS.

The Senatorial Districts established in 1836 are given in the following table. In connection with the name of each county is placed a figure, to indicate the number of Assembly Districts it contains, according to the present Revised Constitution of the State. Each Senatorial District, through the members present from it at an annual meeting, elects a member of the Committee of Nomination :

First Senatorial District.—Kings, 21; New York, 35; Richmond, 1.

Second Senatorial District.—Dutchess, 2; Queens, 3; Sullivan, 1; Orange, 2; Rockland, 1; Ulster, 2; Putnam, 1; Suffolk, 2; Westchester, 3.

Third Senatorial District.—Albany, 4; Greene, 1; Schenectady, 1; Columbia, 1; Rensselaer, 3; Schoharie, 1; Delaware, 1.

Fourth Senatorial District.—Clinton, 1. Herkimer, 1; Saratoga, 1; Essex, 1; Montgomery, 1; Warren, 1; Franklin, 1; St. Lawrence, 2; Washington, 1; Fulton and Hamilton, 1.

Fifth Senatorial District.—Jefferson, 2; Madison, 1; Oswego, 2; Lewis, 1; Oneida, 3; Otsego, 1.

Sixth Senatorial District.—Allegany, 1; Chenango, 1; Steuben, 2; Broome, 2; Livingston, 1; Tioga, 1; Cattaraugus, 2; Schuyler, 1; Tompkins, 1; Chemung, 1.

Seventh Senatorial District.—Cayuga, 2; Ontario, 1; Wayne, 1; Cortland, 1; Seneca, 1; Yates, 1; Onondaga, 4.

Eighth Senatorial District.—Chautauqua, 2; Monroe, 4; Orleans, 1; Erie, 8; Niagara, 2; Wyoming, 1; Genesee, 1.

OFFICERS AND COMMITTEES.

ELECTED FEBRUARY 7, 1896.

PRESIDENT.

JAMES D. SPENCER, Watertown.

VICE-PRESIDENT.

L. DUNCAN BULKLEY, New York.

SECRETARY.

FREDERIC C. CURTIS, Albany.

TREASURER.

CHARLES H. PORTER, Albany.

COMMITTEE OF ARRANGEMENTS.

WILLIAM J. NELLIS, Albany. WILLIAM HAILES, Albany.
REYNOLD W. WILCOX, New York.

COMMITTEE ON BY-LAWS.

H. D. WEY, Elmira. W. J. HERRIMAN, Rochester.
F. C. CURTIS, Albany.

COMMITTEE ON HYGIENE.

HENRY R. HOPKINS, Buffalo. WILLIS G. MACDONALD, Albany.
LEWIS S. PILCHER, Brooklyn. O. W. PECK, Oneonta.
DANIEL LEWIS, New York. A. M. CAMPBELL, Mt. Vernon.
LUCIEN HOWE, BUFFALO.

COMMITTEE ON LEGISLATION.

A. WALTER SUITER, Herkimer. MAURICE J. LEWIS, New York.
J. M. WINFIELD, Brooklyn.

COMMITTEE ON MEDICAL ETHICS.

CHARLES JEWETT, Brooklyn. EUGENE BEACH, Gloversville.
JOHN L. HEFFRON, Syracuse.

COMMITTEE ON PRIZE ESSAYS.

A. JACOBI, New York. HENRY HUN, Albany.
W. S. CHEESMAN, Auburn.

COMMITTEE ON PUBLICATION.

F. C. CURTIS, Albany. F. D. BAILEY, Brooklyn.
CHARLES H. PORTER, Albany. MATTHEW D. MANN, Buffalo.

MEMBERS IN ATTENDANCE AT THE ANNUAL MEETING OF 1896.

DELEGATES.

Albany County :

Louis E. Blair, Albany.
Lorenzo Hale, Albany.
H. E. Mereness, Albany.
W. O. Stillman, Albany.

Albany Medical College :

Joseph D. Craig, Albany.

Allegany County :

H. A. Barney, Belmont.

Broome County :

B. E. Radeker, Deposit.
Chas. G. Wagner, Binghamton.

Cattaraugus County :

J. C. Clark, Olean.
J. D. V. Coon, Olean.

Cayuga County :

F. H. Parker, Auburn.

Elmira Academy of Medicine :

G. V. R. Merrill, Elmira.

Chenango County :

J. M. Thorp, Oxford.

Columbia County :

G. W. Rossman, Ancram.

Cortland County :

Henry T. Dana, Cortland.

Delaware County :

H. A. Gates, Delhi.

Dutchess County :

G. Huntington, La Grangeville.
D. B. Ward, Poughkeepsie.

Erie County :

M. A. Crockett, Buffalo.
Franklin C. Gram, Buffalo.
Wm. C. Krauss, Buffalo.
J. H. Pryor, Buffalo.

Medical Department, University of Buffalo :

Matthew D. Mann, Buffalo.

Franklin County :

Alfred G. Wilding, Malone.

Fulton County :

F. W. Shaffer, Gloversville.

Greene County :

W. F. Lamont, Catskill.

Herkimer County :

W. D. Garlock, Little Falls.

Jefferson County :

E. C. Willard, Watertown.

Kings County :

Elias H. Bartley, Brooklyn.

A. T. Bristow, Brooklyn.

Geo. W. Brush, Brooklyn.

Wm. E. Butler, Brooklyn.

J. T. Duryea, Brooklyn.

J. Fuhs, Brooklyn.

F. A. Jewett, Brooklyn.

David F. Lucas, Brooklyn.

H. C. MacLean, Brooklyn.

Robert J. Morrison, Brooklyn.

David Myerle, Brooklyn.

John C. Schapps, Brooklyn.

J. E. Sheppard, Brooklyn.

Wm. H. Skene, Brooklyn.

E. H. Wilson, Brooklyn.

Long Island Medical Society :

John A. Polak, Brooklyn.

Madison County :

Gilbert Birdsall, N. Brookfield.

Monroe County :

A. W. Henckell, Rochester.

Marion Craig Potter, Rochester.	<i>Onondaga County :</i>
Lewis W. Rose, Rochester.	T. H. Halstead, Syracuse.
<i>Montgomery County :</i>	F. W. Sears, Syracuse.
C. W. De Baun, Fonda.	F. W. Slocum, Camillus.
<i>New York County :</i>	<i>Syracuse Academy of Medicine :</i>
Joshua L. Barton, New York.	Arthur B. Breese, Syracuse.
T. Passmore Berens, New York.	<i>College of Med. Syracuse University :</i>
Dillon Brown, New York.	A. Clifford Mercer, Syracuse.
E. N. Carpenter, New York.	<i>Ontario County :</i>
Walter Lester Carr, New York.	B. C. Loveland, Clifton Springs.
Herman L. Collyer, New York.	<i>Society of Physicians Village of Canandaigua :</i>
James K. Crook, New York.	O. J. Hallenbeck, Canandaigua.
B. Farquhar Curtis, New York.	<i>Rensselaer County :</i>
H. S. Drayton, New York.	M. D. Dickinson, Troy.
Matthias L. Foster, New York.	D. W. Houston, Troy.
H. J. Garrigues, New York.	<i>Richmond County :</i>
Charles L. Gibson, New York.	C. W. Townsend, New Brighton.
Augustin H. Goelet, New York.	<i>St. Lawrence County :</i>
Egbert H. Grandin, New York.	J. H. Brownlow, Ogdensburg.
W. H. Haskin, New York.	P. M. Wise, Ogdensburg.
D. W. Hunter, New York.	<i>Schenectady County :</i>
Henrietta P. Johnson, New York.	H. V. Mynderse, Schenectady.
Emil Mayer, New York.	<i>Seneca County :</i>
Robert Milbank, New York.	Henry P. Frost, Willard.
Daniel P. Pease, New York.	<i>Steuben County :</i>
Grace Peckham Murray, N. York.	Chas. M. Brasted, Hornellsville.
Frederick Peterson, New York.	<i>Tioga County :</i>
Wm. B. Pritchard, New York.	D. S. Anderson, Owego.
Wm. L. Stowell, New York.	<i>Ulster County :</i>
W. B. Vanderpoel, New York.	Alex. A. Stern, Rondout.
<i>New York Academy of Medicine :</i>	<i>Wayne County :</i>
Joseph Collins, New York.	M. A. Veeder, Lyons.
Reginald H. Sayre, New York.	<i>Westchester County :</i>
Ralph L. Parsons, Sing Sing.	H. F. Hart, Shrub Oak.
<i>New York Post-Graduate Medical School :</i>	Evarts M. Morrell, Yonkers.
A. Palmer Dudley, New York.	<i>Medical Association City Mt. Vernon and Environs :</i>
<i>Utica Medical Club :</i>	G. C. Weiss, Mt. Vernon.
William E. Wetmore, Utica.	<i>Yates County :</i>
<i>Utica Medical Library Association :</i>	Chas. E. Doubleday, Penn Yan.
D. C. Dye, Utica.	

DELEGATES FROM STATE SOCIETIES.

Massachusetts.

W. P. Wood, Northfield.

PRESIDENTS OF COUNTY SOCIETIES.

C. H. Glidden, Gloversville, Herkimer County.

A. C. Hagedorn, Little Falls, Fulton County.

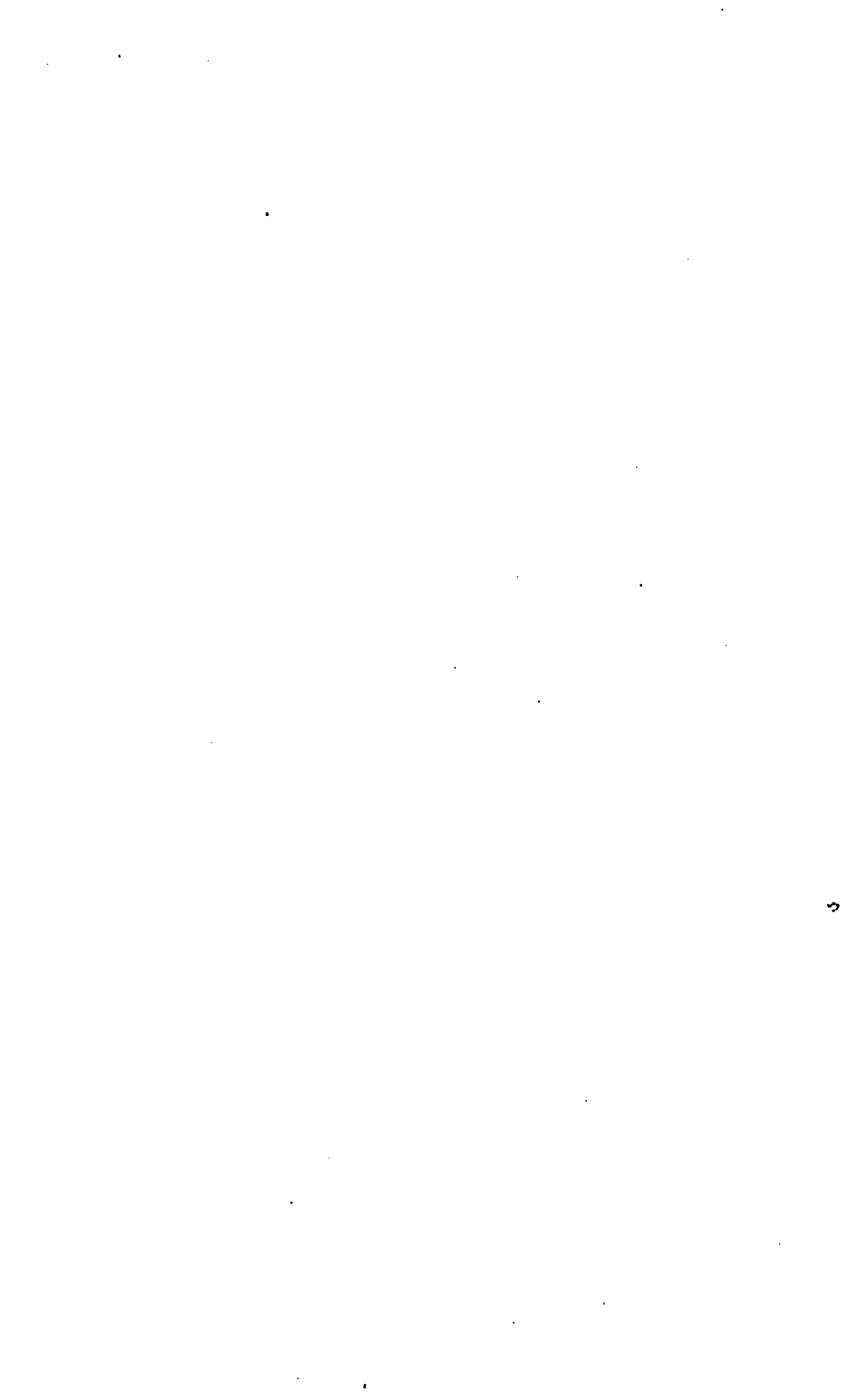
PERMANENT MEMBERS.

Edward B. Angell, Rochester.	G. Graves, Herkimer.
Wm. H. Bailey, Albany.	Henry Gray, Greenbush.
C. O. Baker, Auburn.	William Hailes, Albany.
Lewis Balch, Albany.	John L. Heffron, Syracuse.
O. D. Ball, Albany.	Edgar M. Hermance, Yonkers.
S. J. Banker, Ft. Edward.	Wallace J. Herriman, Rochester.
M. L. Bates, Canaan Four Corners.	Henry R. Hopkins, Buffalo.
Eugene Beach, Gloversville.	Lucien Howe, Buffalo.
Frank Beebe, Johnstown.	Joseph B. Hulett, Middletown.
Herman Bendell, Albany.	Henry Hun, Albany.
J. M. Bigelow, Albany.	Joseph H. Hunt, Brooklyn.
Herman J. Boldt, New York.	A. Jacobi, New York.
R. Brinsmade Bontecou, Troy.	Nathan Jacobson, Syracuse.
L. Duncan Bulkley, New York.	Charles Jewett, Brooklyn.
John E. Burdick, Johnstown.	O. F. Kinlock, Troy.
Daniel S. Burr, Binghamton.	Charles M. Lefler, Gloversville.
E. H. Bridges, Ogdensburg.	Joseph Lewi, Albany.
William Browning, Brooklyn.	Maurice J. Lewi, New York.
C. E. Bruce, New York.	Daniel Lewis, New York.
E. F. Brush, Mt. Vernon.	Eli H. Long, Buffalo.
John H. Cipperly, Troy.	W. G. Macdonald, Albany.
P. Collard, Sing Sing.	William Maddren, Brooklyn.
D. H. Cook, Albany.	A. H. Mambert, Rondout.
Charles N. Cox, Brooklyn.	F. W. Marlow, Syracuse.
Floyd S. Crego, Buffalo.	Charles P. McCabe, Greenville.
J. P. Creveling, Auburn.	Charles Mason, Peekskill.
F. C. Curtis, Albany.	C. S. Merrill, Albany.
Alex. Dallas, New York.	Willy Meyer, New York.
Charles L. Dana, New York.	Aaron B. Miller, Syracuse.
E. E. Elliott, Catskill.	W. A. Moore, Binghamton.
Henry L. Elsner, Syracuse.	John Moronoy, Elmira.
M. Felter, Troy.	John W. Morris, Troy.
Edward D. Fisher, New York.	S. R. Morrow, Albany.
W. E. Ford, Utica.	T. Halsted Myers, New York.
Geo. Henry Fox, New York.	W. J. Nellis, Albany.
S. H. Freeman, Albany.	James E. H. Nichols, New York.
Earl D. Fuller, Utica.	George H. Oliver, Dickinson Centre.
John Gerin, Auburn.	Roswell Park, Buffalo.
W. M. Gibson, Utica.	C. L. Parkhill, Hornellsville.
I. N. Goff, Cazenovia.	A. H. Palmer, Marlborough.
W. I. Gordon, Copake.	T. Kirk Perry, Albany.

Wendell C. Phillips, New York.	T. F. C. Van Allen, Albany.
L. S. Pilcher, Brooklyn.	J. M. Van Cott, Brooklyn.
M. G. Planck, Schenectady.	A. Vander Veer, Albany.
G. P. K. Pomeroy, Stuyvesant.	E. Van Slyke, Albany.
C. H. Porter, Albany.	A. T. Van Vranken, West Troy.
William W. Potter, Buffalo.	W. A. Vincent, Three-Mile Bay.
J. B. Ransom, Dannemora.	Theodore C. Wallace, Cambridge.
DeWitt C. Rodenhurst, Philadelphia.	Samuel B. Ward, Albany.
John O. Roe, Rochester.	John T. Wheeler, Chatham.
George Seymour, Utica.	Reynold W. Wilcox, New York.
James D. Spencer, Watertown.	R. J. Wilding, Malone.
B. U. Steenberg, Albany.	Charles E. Willard, Catskill.
C. L. Stiles, Owego.	James M. Winfield, Brooklyn.
E. V. Stoddard, Rochester.	P. M. Wise, Ogdensburg.
A. Walter Suiter, Herkimer.	C. E. Witbeck, Cohoes.
Peter L. Suita, Tribes Hill.	R. A. Witthaus, New York.
L. Swartwout, Prospect.	W. Gill Wylie, New York.
T. Oliver Tait, Rochester.	F. W. Zimmer, Rochester.
Willis G. Tucker, Albany.	

INVITED GUESTS.

Robert Babcock, Albany.	C. H. Moore, Albany.
Theresa Bannan, Syracuse.	J. M. Moore, Albany.
Daniel C. Case, Slingerlands.	Eliza M. Mosher, Brooklyn.
Gaylord P. Clark, Syracuse.	George S. Munson, Albany.
F. J. D'Avignon, Ausable Forks.	Leo H. Neuman, Albany.
Charles E. Davis, Albany.	Lewis R. Oatman, Gloversville.
William Davis, Gloversville.	F. H. Peck, Utica.
O. H. Deck, Herkimer.	James W. Putnam, Buffalo.
Chas. W. Eliot, Harvard University.	Arthur G. Root, Utica.
George T. Elliot, New York.	Wm. B. Sabin, West Troy.
G. P. English, Boonville.	B. Sachs, New York.
J. R. English, Fishkill.	Melvin Sheldon, Valatie.
James H. Etheridge, Chicago.	J. K. Skillicorn, Albany.
George S. Eveleth, Little Falls.	Frederick W. Smith, Syracuse.
E. S. Foreman, Auburn.	F. S. Snow, Valatie.
H. L. Furbeck, St. Johnsville.	T. L. St. John, Brunswick.
Elizabeth H. Gerow, Poughkeepsie.	John Ben. Stonehouse, Albany.
J. Riddle Goffe, New York.	Elizabeth B. Thelberg, Poughkeepsie.
W. S. Hale, Albany.	John Thompson, Albany.
E. H. Humphrey, Greenbush.	P. W. Van Peyma, Buffalo.
T. W. Jenkins, Albany.	E. H. Wakelee, Big Flats.
F. A. Jones, Rochester.	John B. Washburne, Delmar.
Ellis Langfeld, Lake Placid.	Hiram Wiggins, Elbridge.
Sherwood Le Fevre, Albany.	George D. Wight, Saugerties.
A. MacFarlane, Albany.	G. A. Williams, Albany.
E. N. K. Mears, Albany.	T. Floyd Woodworth, Kinderhook.
F. M. Michael, Binghamton.	George Woolsey, New York.
W. A. Mills, Marathon.	



MINUTES OF THE PROCEEDINGS
OF THE
MEDICAL SOCIETY OF THE STATE OF NEW YORK,
AT ITS NINETIETH ANNUAL SESSION,
HELD AT
ALBANY, JANUARY, 1896.

FIRST DAY.—*Morning Session.*

THE PRESIDENT, DR. ROSWELL PARK, of Buffalo, called the meeting to order Tuesday, January 28, 1896, at 9.30 A.M., in Jermain Hall, Albany, and the exercises were opened with prayer by the Rev. Edward G. Selden, D.D., of Albany.

THE PRESIDENT then delivered his

INAUGURAL ADDRESS.

GENTLEMEN: The Medical Society of the State of New York closes the ninetieth year of its existence in a condition upon which its presiding officer may well congratulate its members. In mental activity and in numerical strength it apparently was never in better condition, while during the past year its losses by death have been relatively few in number. The members who have died since our last meeting are the following:

Dr. George E. Fenwick, honorary member, died at Montreal, Can., June 26, 1894, aged sixty-nine years.

Dr. Judson B. Andrews, permanent member, died at Buffalo, August 3, 1894, aged sixty years.

Dr. M. H. Burton, permanent member, died at Troy, April 28, 1895, aged sixty-two years.

Dr. Richard D. Traver, permanent member, died at Troy, May 17, 1895.

Dr. Erastus D. Chipman, permanent member, died at Saugerties, May 24, 1895, aged sixty years.

Dr. George E. Law, permanent member, died at Brooklyn, May 25, 1895, aged thirty-five years.

Dr. Amos Fowler, permanent member, died at Albany, October 23, 1895, aged seventy-five years.

Dr. Franklin Townsend, permanent member, died at Albany, October 31, 1895, aged forty-one years.

Dr. Richmond Lennox, delegate, died at Brooklyn, November 14, 1895, aged thirty-four years.

Dr. Samuel Fleet Speir, permanent member, died at Brooklyn, December 19, 1895, aged fifty-seven years.

Dr. William H. Gidney, permanent member, died at Milton, January 18, 1896, aged seventy-eight years.

In the last volume of the *Transactions* was printed a full list of the members of the Society, arranged chronologically, while the dates of death of those deceased were given so far as possible. Your Secretary would estimate it a great favor if members would send him any information by which this list could be made more correct, or any other data which should be incorporated in such a place. It is desired to make this list absolutely correct, and it can only be made so by the co-operation of members throughout the State.

It is my duty to call your attention to a number of events and matters of importance. At the last meeting of the American Academy of Medicine, held in Baltimore, May, 1895, there were read several important papers relating to hospitals. At their close a committee was appointed to formulate conclusions, and the Secretary of the Academy was instructed to invite the co-operation of various State Societies in carrying into effect their recommendations. The papers are published in full in the Bulletin of the Academy for the current year.

There has been recently organized the World's Congress of Medicoclimatology, the Secretary of each State Society being empowered to appoint ten physicians from its membership, five to act as delegates and five as alternates, who by this means become eligible to membership. Your Secretary has received full notice to this effect from the Secretary of the Congress, and has appointed the following members as such committee: Drs. H. R. Hopkins, of Buffalo; A. N. Bell, of Brooklyn; R. A. Witthaus, of New York; Henry L. Elsner, of Syracuse; Wm. M. Gibson, of Utica; Henry P. Loomis, of New York; W. C. Wey, of Elmira; E. V. Stoddard, of Rochester; S. B. Ward, of Albany; A. Walter Suiter, of Herkimer.

The next meeting will be held in San Antonio, February 20-22,

1896, and the objects and purposes of the Congress are commended to your attention and co-operation.

The profession throughout the country, and indeed throughout the world, is certainly to be congratulated upon the resumption of the *Index Medicus*. It had been my intention to have urged this Society to assist in the same had it not been already effected by private subscribers.

This would seem to be the proper time to call your attention also to the conclusion of the great work published by the government and prepared under the supervision of Dr. J. S. Billings, of the Army Medical Department. The final volume, completing the work up to a recent date, was issued during the past year, and this would seem to be the time to render him the honor which is justly his due and our congratulations upon the successful completion of his *magnum opus*. No greater monument could any man erect to his own memory than the Doctor has furnished in this colossal undertaking. Now that he has retired from the army to assume the duties of a professorship in civil life, I am sure that the best wishes of every member of this Society will go with him, and, we hope, cheer and invigorate him in his new field of labor.

The growing importance of the Medical Department of the State Library certainly deserves and demands your attention. By the co-operation of officers of the State Homeopathic Society with your Secretary and officers of this, and with others interested in the preservation and utilization of the books, there was incorporated into the supply bill before the last Legislature an item appropriating five thousand dollars for the maintenance of this collection of books. It required not a little shrewdness and attention on the part of those interested in advocating the passage of this bill in its entirety and the securing of this sum for this specific purpose. The purpose, however, was finally achieved, and the Governor signed the bill containing the appropriation. I imagine that it is not generally known that any reputable physician resident in this State has a right to the use of these books, providing only that he pay transfer charges and assume responsibility.

I strongly urge that a resolution be passed by this Society urging that this appropriation be annually made for the purpose of caring for and adding to the present collection. Mr. Dewey, the Secretary of the Board of Regents and the Director of the State Library, advises that our Society appoint a Committee upon the State Library, which shall co-operate with the Regents and take a special interest in developing this department.

A majority of the committee ought to be appointed from those not far distant from Albany in order that they may be more helpful.

In order to make this library, which is already large and valuable, as useful as possible, a catalogue of the books at present contained in it should be printed and sent to every physician in the State. Whether this will be done by the library officials, or whether it will have to be done by the members of this Society, is not yet quite certain, and I think might be left to the committee above suggested, with power to act, and with direction to issue such list and disseminate it widely. The Regents have recently added some twelve hundred volumes to the collection first donated by the Albany Medical School, and will add to it, I am assured, as fast as means can be furnished.

There has come up in my mind the question whether the Committee on Medical Library might not arrange with the Director, Mr. Dewey, to issue travelling libraries of medical books to communities where several physicians reside, under proper restrictions, such travelling libraries to be kept for reasonable time and then returned to headquarters, and in every way to be handled as are the other travelling libraries sent out from the Regents' headquarters.

In paragraph 2, Chapter I., of our By-laws, it is stated that incorporated voluntary medical societies whose members are members of their county medical society shall be allowed delegate representation in this Society, thereby putting them practically on an equality with the regular county organizations. It has appeared to a number of our members in time past that that provision is altogether too lax in character and effect, and that such privilege is open to abuse, to the great detriment of our traditional principles and the system upon which this Society was originally organized. Under the operation of this By-law and of the laws of the State of New York, any five physicians could form themselves into a voluntary medical society, incorporate themselves as such, and then proceed to attempt the reception of an accredited delegate from their body to ours. The voting power of this delegate would be equal to that of any other or any permanent member, and it would be possible in time for designing men to take advantage of the possibilities thus placed before them to quite supplement our present system of delegate representation by a much less desirable condition of affairs. Moreover, such re-arrangement would in large measure avoid such reduplication of society membership and delegation as now exists—*e. g.*, in Brooklyn, where the Kings County and the Long Island Medical Societies, which have a nearly identical membership, can yet both send delegates; all of which tends to disintegration by lessening influence and attendance here.

At the last meeting a resolution was introduced by Dr. Suiter

instructing the Committee on By-laws to report a plan for raising the standard of requirement as to the number of members of the society seeking such representation, as well as the requirement that it should have been in existence for at least three years. Inasmuch as such reports should come before you at this meeting, I deem it well to call your attention to the matter in this way, and to bespeak for such by-law, when reported, your earnest and, if possible, your favorable consideration, since it seems to me unfair that a handful of men should exercise the prerogatives of a large and dignified body.

It is now more than fourteen years since an event in the history of this Society which has had a most marked influence not only upon its own affairs but upon professional matters throughout the land. I allude to the differences of opinion which brought about a separation of this organization from the American Medical Association. Whatever the causes which operated at that time to cause this deplorable state of affairs, it is certain that they have since been made less operative. I am sure that the majority of members of the national body long to see this Society restored to its early affiliations, and I am sure that a majority of our own members would gladly welcome the day when harmony might be restored and when the National Association would again receive our delegates with their old-time cordiality. That day, it seems to me, draws ever nearer, and were it not for the ill-advised and much-deprecated animosity of a few opponents of peace and good-will would be plainly in sight. I would urge upon our members the importance of hastening by all judicious means the restoration of former relations and the election once more of delegates to that Association just so soon as we are assured that they will be received in the same spirit in which they are sent. Only the prejudices of a comparatively small number of men stand in the way of this most desirable accomplishment. I urge no lowering of our dignity; only that the actions of fifteen years ago by men who did not then understand our position, and who are perhaps not yet moved by the liberal spirit of the age, be forgotten, and that brothers of the noblest of all professions again clasp hands across the breach which was not of their own making.

Another matter deserving of your notice is one also referred to in my predecessor's address. It is one upon which I have long had strong convictions, and which, though not received with universal favor then, and one which may not find it even now, is, nevertheless, one to which it seems my duty to again call your attention. I allude to the change in meeting-place. While there are good and not merely sentimental reasons perhaps in favor of our meeting-place being always at the State Capital, there are so many other reasons why it is an undesirable place

that I question whether the latter do not very greatly preponderate. The absence of hotels, the lack of a really suitable hall for our daily meetings, but, most of all, the sad lack of hotel accommodations, seem to make this city a most undesirable place in which to convene. I think we may safely dismiss from our minds any fear of our meetings anywhere else being less dignified or less scientific. It seems to me that the natural home for this Society should be rather in the metropolis than in the Capital. The atmosphere of the one cannot be more tainted nor laden with the charges of political corruption and malfeasance in office than is that of the other, while the stimulus of metropolitan activity, the presence of museums and libraries containing treasures equal to anything found in this city, and the fellowship of the more active men in the profession, many of whom we seldom see in Albany, would, it seems to me, be of great benefit to all of us. The matter of comfortable accommodations, or the so-called "creature comforts," is one which really cannot be neglected at such meetings as ours. I again recommend to you, then, the trial of a change of meeting-place, not forgetting that this calls for change in our By-laws which requires a year's notice, or else their temporary suspension for purposes of trying the experiment.

The Committee upon President's Address last year recommended the disposal of executive business by a *comitia minora*, and the reference of the subject to a special committee of five to be appointed by the Chair, with instructions to report at this meeting. This report ought also to come before you, and certainly calls for deliberate action because it deals with an important matter. My own feeling is that the time of the Society should not be consumed with a multitude of executive details, but that a *comitia minora* of sufficient number might be vested with authority to manage many of the details which consume two or three hours of each day.

It is one of the duties of this Society to nominate each year certain members for the State Examining Board. It seems to me most wise that the Committee in making these nominations should have regard not merely to the age or general clinical experience or political position of nominees to these positions, but that they should take into account most of all the fundamental purpose for which they are appointed. I say this because I have in time past looked over a number of examination papers which have been submitted at various times to students. I regret to say that a number of questions which I have seen there given a prominent place are based upon notions, theories, or practices which are now in large measure discarded by the most progressive men. It certainly is fair to our students to say that they are taught as a rule by the most progressive members of our pro-

fession. If, now, there be submitted to them questions which would have been suggested by the teaching of thirty years ago, but which has been since entirely relegated to the past, it is not likely that they can pass so good an examination, nor is it essentially fair either to them or to the profession at large which they desire to enter. I say this without the slightest prejudice to the members of this Society, because I have not the slightest idea who has propounded the questions to which I thus object; and I mention it here before you only because it concerns our common interests.

I am much indebted to the Hon. T. Guilford Smith, of the Board of Regents, for the following information with regard to the condition of the medical schools in our State:

1. The total number of students in New York State medical schools for the winter of 1894-95 was 3756, a gain of nearly 700 over 1892. Statistics for the present winter do not show any decrease.

2. The number of students from other States and countries for 1894-95 was 1706. Statistics for the present winter show an increase in the number of these students from abroad.

3. The absolute uniformity in the preliminary examinations for medical students' certificates is shown by the fact that 66.8 per cent. of all answer papers written by law and medical students were accepted, as compared with 67 per cent. of answer papers submitted from the schools. The slight difference of 0.2 per cent. shows that the standard is practically the same for all academic examinations.

4. The following comparison of the results of the licensing examinations for the year ending July 31, 1895, is most interesting:

College.	No. candidates.	No. rejected.	Honor.	Per cent. passed.
Woman's Med. Coll. New York Infirmary	18	0	0	100
Syracuse University	10	0	0	100
College Physicians and Surgeons	120	8	14	93
New York Homœopathic Med. College	35	3	8	91
University of Buffalo	52	6	1	89
Eclectic Medical College	8	1	0	88
Bellevue Hospital Medical College	38	6	2	84
New York Medical College and Hospital for Women	10	2	2	80
Long Island College Hospital	38	8	1	79
University Medical College	69	17	3	75
Albany Medical College	36	11	0	72
Niagara University	10	3	0	70

As you see, the schools have been arranged in the order of the per cent. accepted at the licensing examinations.

5. The following table shows the relative standing of all the medi-
Med N Y

cal schools in the State since the licensing examinations were first established :

College.	No. candidates.	No. rejected.	Honor.	Per cent passed.
Woman's Med. Coll. New York Infirmary	34	1	1	97
College Physicians and Surgeons	203	11	31	94.5
New York Homœopathic Med. College	69	5	14	92.7
Syracuse University	26	2	2	92.3
New York Medical College and Hospital for Women	24	2	3	91.6
University of Buffalo	90	9	2	90
Bellevue Hospital Medical College	109	15	5	86.2
Long Island College Hospital	79	11	3	86
Albany Medical College	104	15	2	85.5
University City of New York	157	27	8	82
Eclectic Medical College	14	3	1	78.5
Niagara University	27	7	0	74

It speaks well for New York State medical schools that of the 445 candidates examined during the year ending July 31, 1894, 291 were graduates of New York medical schools, and 154 of schools in other States and countries; and that of the 88 candidates rejected at these examinations only 42 were graduates of New York medical schools and 46 of schools in other States and countries.

I have learned, moreover, from authentic sources that there is an attempt to be made this winter to alter existing legislation with regard to the present requirements, if not for commencing the study of medicine, at least for graduating and licensing. This matter I think ought to be referred to a proper committee with instruction to do all they can to prevent any reduction of present requirements.

For the following information regarding the present status of our State laws concerning topics of general professional interest, I am indebted to Hon. Tracy C. Becker, of the Buffalo bar, a past President of the New York State Bar Association :

The abolition of the office of coroner as a constitutional office by the amended constitution still leaves the statutory regulations creating the office and regulating its functions in full force. A by-law to remedy this was proposed by a committee of the New York State Bar Association, acting in conjunction with Dr. Witthaus, a member of this Society, and with our Society Committee on Legislation, along with the President of the New York State Homœopathic Medical Society. This by-law was reported favorably by the Assembly Committee on Judiciary, but was amended in the House as to the appointing power in New York City, and sent back to the Committee. Inasmuch as there was a prospect that the by-law thus amended might bring about a

partisan struggle, the Bar Association Committee did not press it, but intend to bring the matter up again this year.

Certain points in the by-law as presented last year deserve some notice on your part. It was proposed in this that so soon as a coroner's term of office expired the district attorney of his county should appoint one physician for every forty thousand of the population of said county, to be designated as the medico-legal officer of such county, holding office during the pleasure of the district attorney who appointed him. To this officer was to be reported promptly every case of sudden, accidental, violent, or every death under suspicious circumstances. It was also expressly provided that no statute prohibiting the disclosure of facts learned by the physician in the performance of his professional duties could in any way prohibit or restrict his repeating said facts and circumstances and testifying in regard to them when so required.

This medico-legal officer was given the most of the duties of the former coroner; while it was also made his duty upon the written order of the district attorney to perform any autopsy or post-mortem examination deemed necessary. His fee was to be fixed by the supervisors of each county, either as an annual salary or as a compensation by stated fees for services rendered. It was provided that in case the fee system were adopted in any county the fees for each examination when no autopsy was made should be not less than five nor more than twenty dollars, and where autopsy was made the fee was to be not less than ten nor more than thirty dollars, to be paid upon the certificate of the district attorney. It will be seen that these fees, especially for post-mortem work, were ridiculously small, and it seems to me that the sentiments of this Society ought to be expressed regarding this matter in no uncertain terms.

The proposed statute also empowered the proper authorities to employ medical experts as usual. It provided also that the accused should have the right to be present in person or by counsel with not more than two duly licensed and registered physicians at the autopsy, but that his representatives should have no right to take part in the same. The medico-legal officer was also made liable on the written order from any judge of a court of record to examine every person, body, or thing in any way connected with the institutions in a criminal or civil suit or proceeding, and to testify concerning the same, charges for this work to be taxed upon the defended party and allowed in the same manner as costs in a judgment against him in any civil action. The proposed statute also repealed all previous legislation concerning coroners, coroners' duties, etc.

I am informed that in the law to be presented this year the expert clause will not be included. Mr. Becker, however, suggests that there

be added a clause giving the court power at its discretion to call upon three or more superintendents of State insane asylums or their assistants to act as a board of experts in criminal cases where the plea of insanity is interposed, to assist the court and jury in determining the merits of the plea. This may raise the interesting question whether a law which debars the production by the prosecuting attorney or the defendant of any other expert witnesses would be constitutional.

I must certainly recommend to your consideration the advisability of appointment of a special committee to examine into the rules of law regarding physicians as expert witnesses, and to recommend legislation which may be calculated to remedy the present undesirable system of hiring partisan experts. It is probable that action working in this same direction will be taken by the Bar Association, if it has not been already.

In this direction I recommend also the appointment of a committee to consider the present statute as to privileged communications, or else its reference to the same committee as above. A general term of the Supreme Court has recently construed the section of the Court of Civil Procedure which forbids a physician giving evidence as to any matter learned by him when acting professionally, which was necessary to enable him to prescribe, in such a way that where the physician is compelled to go into court and sue to recover the value of his services and the patient denies the same, the physician cannot testify as to what was the nature and extent of his services, as this would require the disclosure of the patient's disease, etc. This certainly was never the intention of the framers of the original statute. It most certainly should be amended so that in a civil suit for services by physicians as against patients, or in a suit for alleged malpractice where the character, extent, or value of the medical services rendered are disputed by the patient, the physician ought to be allowed to testify as to what these services were. This is only common decency and common honesty, and is a matter of pressing importance to us all. The present construction of the statute works a practical denial of justice in suits by physicians against patients to recover for services, while in malpractice cases the courts have felt compelled to avoid the strict intent of the statute by getting up theories as to waiver, etc., which are, to say the least, mere subterfuges; so in criminal cases the courts have evaded the strict language of the prohibition of the statute by holding that it does not apply as a shelter for the guilty when committing crime, etc. This whole subject is admirably treated of in Mr. Barton's article on "Professional Communications," in Witthaus and Becker's *Medical Jurisprudence*, Vol. I.

The responsibility of the physician's estate for damages claimed after

his death is a matter, in some States at least, of great importance. Thus, against the estate of Dr. Shepherd, of Grand Rapids, a jury has recently brought a verdict of ten thousand dollars, suit being for fifty thousand dollars, damage having been claimed for a ventral hernia following a laparotomy. While the case will undoubtedly be reversed in a higher court, it, nevertheless, shows that evil-disposed people can create a world of trouble for the families of deceased members of our profession. Dr. Groner, of Grand Rapids, read a paper last September before the Mississippi Valley Medical Association (*American Medico-Surgical Bulletin*, November, 1895, p. 1299) in which he proposed the effort to secure the enactment in the Michigan Legislature of a bill to this effect: That in all suits that may be brought against any physician or surgeon for any large damages done in his professional capacity, the plaintiff shall, before such suit be commenced, give a bond for at least double the amount of damages claimed in the court, such bond to be secured in such a way that in case of failure to make out a case the defendant shall be entitled to and shall recover from plaintiff or his bondsmen the costs and expenses of the suit and such damages as the court may award. I think it might be represented to our home legislature that at least nine-tenths of the suits which are brought against medical men are utterly unwarranted and fail of success, and that the majority of them are prompted by maliciousness and desire to levy blackmail. One of the most prominent judges in the State has recently said to me that he did not recall a case which had ever been tried before him against a respectable physician which had in it the ordinary elements of desert or success. This being the case, I think we, as a profession, are entitled to the protection of the law, and deserve accordingly the enactment of some such wise legislation. I do not know from what body effort to secure such enactment could more consistently and properly proceed than from this Society, and I invite your attention thereto.

There is a distinct provision of the State code which exempts physicians from giving testimony concerning matters which have been revealed to them in the discharge of their professional work, and which may be regarded as privileged communications. This provision obtains in almost every civilized country. Yet the entire thought of our legislators apparently has been to protect the patient, unmindful of the fact that the privilege is more often abused than properly used, and that behind this resort many men take refuge. It is certain, then, that the interests of justice and of decency are by no means always observed in the insistence of this privilege, of which lawyers and clients so often avail themselves.

It would seem that our legislators have been blind, however, to

another aspect of all this, which is that the physician himself is entitled to some protection and to justice as much as any patient. There certainly are enough times when it is as much to the interest of the community at large and to the observance of strict justice, as well as decency and propriety in every respect, when the physician himself is by all means the best judge as to what he ought to reveal or ought not; and, furthermore, when he is himself the best judge as to his own interests in the matter. If there be any such thing as justice, it pertains as much to one individual as to another; and it is manifestly unfair that patients should resort to physicians for the purpose of distorting the spirit of the law and causing trouble and annoyance to the physician himself—trouble often which is absolutely premeditated and deliberately planned perhaps between the patient and some disreputable attorney. It is, then, both as a duty and as a pleasure that I urge your attention to this aspect of this section of the code, and most warmly recommend the effort to so modify legislation that this section of the code may be amended by adding the following words, or something to their effect:

“When the physician has good reason to think that the privilege of these professional communications is being used to his own detriment, or when the waiver of the right would evidently redound to his own disadvantage and not to the best interests of society, he shall be himself privileged to claim the right of a privileged communication, and may not be compelled to testify when such good reasons may make him wish to avail himself of the right.”

I have many times seen arise in court exigencies which made me feel that our profession was being imposed upon, and that lawyers were deliberately taking advantage of us. In a recent instance in my own experience, I refused to testify in a case of this character, and permitted myself to be fined for contempt of court rather than sacrifice my self-respect and forfeit my own sense of personal and professional dignity. It is not that I give the above advice, then, in a spirit of rebellion as against the wrong done me, but because I acted in court in accordance with my convictions, accentuated by years of experience, and should have felt myself disgraced had I taken any other course.

Further evidence of the injustice done us by the law is evident from a recent case in this State, in which it was held that, although a physician may be compelled to sue his patient for the amount of his bill, if the patient denies the employment the physician cannot testify as to what he did or prescribed for the patient. We are so often made the victims of injustice of this kind that it seems to me as if it were time for the profession as a whole to rise and demand that their rights be better respected. I am the more inclined to make this remark because quite

recently an eminent lawyer has stated to me that in his estimation the medical profession were the most influential class in the community. His words were practically to this effect:

"You doctors do not realize what a force you are. When you combine for any purpose you are bound to achieve it if it have any substantial basis whatever. You do not know your own power."

If this be true, it is time that we learned it for our own benefit.

Not a little interest has been aroused by the successful attempt of Dr. James E. Reeves, of Chattanooga, Tenn., during this past year, to rebuke indecency and expose dishonesty and fraud, as he certainly did when he took a bold stand in opposition to the Amick Chemical Company and their blatant and unscrupulous advertisements in the public papers. Full of years and ripe learning, the Doctor has but recently passed over to the silent majority, his life having been shortened, there is good reason to think, by the extra labor and worry of defending himself in defending the profession. The result was a celebrated case in the annals of jurisprudence, the company making a desperate attempt to defend itself and to assume a respectable attitude before the public. A libel suit for enormous damages was begun against the Doctor. It is a pleasure to be able to record that the jury after ten minutes retirement unanimously found for the defendant. Dr. Reeves was exposed to no small calumny, and the profession throughout the country owe him a great debt of gratitude for the noble attitude which he assumed and the fact that he was willing to spend largely of money and time to defend their honor. His success will in all probability be deterrent to many other would-be impostors. In a personal communication, dated in August of last year, he said to me:

"The victory won covered the whole medical profession of this country. The rascals had set apart the sum of \$30,000 for the prosecution of any and every man who dared to denounce the villainous fraud. The next day after the verdict the company made application to the Secretary of the State of Ohio for the reduction of capital stock from \$300,000 to \$60,000, because in Ohio all stockholders are liable for double the amount of their stock. On the day set apart for the trial of the case in Chicago, S. G. Sea, a former owner of the original \$300,000 worth of stock, a newspaper man whose flaming certificate that he had been cured by Amick after he had been given up to die by most distinguished men, was spread broadcast, himself died of consumption in New Mexico, where he had gone in the hope of prolonging his wicked life."

And the Doctor closed his letter to me with this remark: "So the great God and an avenging Nemesis were on my side—upon the side of truth, justice, and the good name of the profession."

Another matter to which I desire to call your attention is concerning the examination of water-supply made under the auspices of the State Board of Health. If bacteriological investigations have any value in preventive medicine or in matters of public hygiene, surely there is no more important application of the science than to the examination of the water-supply of small and large towns. It appears that the qualitative and the quantitative analysis of water is frequently made by the experts employed by the State Board; but when it comes to the question of bacterial pollution of water, no suitable examination has been authorized or conducted by this Board. This, it seems to me, is radically wrong, and is a matter which should properly be brought to your attention. I advise, therefore, the passage of a suitable resolution, and the transmission to the State Board of Health of a suitable memorial which shall call their attention to this lack in their armamentarium, and shall call for the proper remedy. As it is at present, corporations, institutions, or towns desiring a bacteriological verdict upon their water-supply must have it done at their private expense; which, where individuals alone are concerned, is a matter of which one cannot complain, but when the public health is concerned is one for which we naturally look to this Board for satisfactory information.

A letter received from the Secretary of the State Board of Health, dated December 17, 1895, in reply to an inquiry of mine, contains this paragraph:

"It is hoped, however, that in a short time the Bender Laboratory of Albany, which is now in course of construction, will be in a position to do bacteriological work for this Board."

Another topic to which I invite your attention is the growing importance of the State Commission in Lunacy. There has crept into the minds of a number of individuals, not only those connected officially with the various asylums of the State, a feeling that is to be deprecated by all of us, as I know it is by the members of the Commission. It is to the effect that there appears a growing tendency upon the part of the Commission to assumption of all responsibility and to the centralization of all power in the management of the insane and the institutions for their benefit. Without in the slightest degree reflecting upon the present management, I must still remind you that the personnel of the Commission may be changed at almost any time, that it is exceedingly likely to be changed with the alternations of political events, and that inasmuch as no one may know who shall hereafter compose it, no one may foresee to what extent abuses may hereafter creep in which shall call for public censure. Should the Commission secure all the power they are now ambitious to assume in the letting of contracts, etc., they will have the disposition of between four and five million dollars of

State money every year. This is indeed a large amount to intrust to any board whose political complexion may never be foretold six months in advance. It has never been yet demonstrated, at least to my knowledge, in recent years, that the local boards of managers have shown themselves either incompetent to discharge their duties or unmindful of the best interests of those in their care; while in nearly all respects it must be conceded that they are certainly in the best position to judge of what their particular institutions most need. Should the State Commission be given unlimited power in this direction, I can only foresee conflict of interests with no accruing benefits.

There is one other matter no longer within their power to regulate, upon which I think an expression from this Society would be proper, if not welcome. The attempt has recently been made to regulate by an inflexible standard (law) the wages of all nurses, orderlies, etc., employed in our State hospitals. Under varying conditions it seems almost impossible to do it, especially when this standard is low. It is not possible to secure in New York and in Buffalo orderlies and competent nurses who may be willing to work for the same scale of wages as others who may be secured in the rural districts, such as Ovid, etc. It seems to me that injustice is done either to the patients or to individuals by endeavoring to establish an inflexible scale of wages.

I have seen some evidence in various quarters that, in the absence of a written code, for which for years members of this Society have felt no use, there has been some lowering of obligation of members to each other and of members to outsiders, both laymen and professional. It has come to my knowledge that on the absence of such code certain designing men have insisted in order to gain ends which are not in accordance with the highest principles of professional morality and decency. I would like to emphasize before you, and for you in circles outside our own, that the absence of a written code has not in effect changed, and should not be permitted to affect our obligations to each other nor to outsiders in the slightest degree, and that no action of ours should be permitted which may be regarded as in any way lowering the highest attainable standard of real ethics. It has been stated, again, in certain quarters that there could be no such thing in our Society as disciplining members for conduct unbecoming gentlemen. While it is hoped that occasion for such action may never arise, I think it ought never to be forgotten that we still are equal to all occasions when our public or our private dignity may be assailed, or when some member, forgetful of that which he should remember, transgresses the limit which gentlemen and dignified professional men never permit themselves to pass. I hope it may never happen that any member of this Society may boast, nor anyone not a member may charge,

that we have lost the power of disciplining our own members for lapses against the law of international ethics or professional decency.

In closing my remarks to you this morning I should be most unjust to gentlemen who have been earnest and indefatigable in their labors in your behalf did I fail to publicly acknowledge the debt which you and I owe to the Business Committee, Drs. Hopkins, Jacobson, and Winfield. Gentlemen who have not served in this capacity have probably no idea of the hundreds of letters and hours of work which are required in order to provide such a program as they have laid before you. To them and to the Secretary I return my heartfelt thanks, in which expression I am sure you all will also join.

Finally, if I may be permitted an allusion to the most unexpected elevation to office with which you were so kind as to honor me a year ago, I may say that it was indeed most unsolicited and unsought. Coming as it did during my absence from the meeting and at a time when I never could have dreamed of such a thing, it seems to me the highest prize in the gift of the profession, and one for which, though I might have coveted it never so much, I never would have dared hope. That a man could be elected who never sought nor cared for office, and during his absence, has been something which has surprised me no less than many other members of this Society. I only hope the progress of this meeting may show that no serious blunder was made in the selection. I cannot close, however, without taking this opportunity of most earnestly and sincerely thanking you for the undeserved and unexpected honor.

Dr. LUCIEN HOWE moved that the address be referred to a committee of five to report upon the recommendations contained in it. The motion was carried and the following committee appointed: Drs. Lucien Howe, of Buffalo; Daniel Lewis, of New York; William Browning, of Brooklyn; C. S. Parkhill, of Hornellsville; Josiah Hasbrouck, of Port Ewen.

The President announced the following committees:

Business Committee: Dr. Henry R. Hopkins, of Buffalo; Dr. Nathan Jacobson, of Syracuse; Dr. J. M. Winfield, of Brooklyn.

Committee on Credentials: Dr. Daniel S. Burr, of Binghamton; Dr. T. F. C. Van Allen, of Albany; Dr. M. L. Bates, of Canaan.

Committee on Nominating Candidates for Vacancies on the State Board of Medical Examiners: Dr. F. C. Curtis, of Albany; Dr. James D. Spencer, of Watertown; Dr. Charles Jewett, of Brooklyn; Dr. L. Duncan Bulkley, of New York; Dr. Nathan Jacobson, of Syracuse.

The Secretary presented a list of names of applicants for permanent membership, which, under the rules, were referred to the Committee on Nominations.

Dr. CHARLES H. PORTER made his report as Treasurer, and, also, as Trustee of the Merritt H. Cash Prize Fund. [See reports].

The Treasurer's report was referred to an Auditing Committee, which subsequently made the following report :

The Auditing Committee have examined the Treasurer's accounts and the vouchers attached thereto, and report that they find the same correct and the vouchers all present. They have also examined the bank books, and find the amount of \$2307.17 deposited in the Albany Savings Bank, in the name of the Treasurer, to the credit of the general fund, and \$687.56 deposited in the same bank, in the name of the Treasurer, to the credit of the Merritt H. Cash Fund.

The Committee would recommend that in future the actual books of record of the Treasurer be presented for audit, in addition to the balance sheet, and that the bank books be always exhibited.

Respectfully submitted,

L. DUNCAN BULKLEY,
JOHN T. WHEELER,
H. H. DEANE,
Committee.

Accepted.

Dr. F. C. CURTIS presented the following :

REPORT OF THE COMMITTEE ON BY-LAWS.

The Committee on By-laws, in response to the direction of the Society at the last annual meeting, offer the following amendments to the By-laws :

1. To amend Chapter I., Section 2, defining terms on which voluntary medical societies may secure representation :

"Incorporated Voluntary Medical Societies which have been in existence three years, having not less than fifteen members who are also members of a County Medical Society, which hold meetings at regular intervals through the year, and whose By-laws conform with those of this Society, are entitled, if admitted to representation, to one delegate ; application for representation must be made three months before it is acted on by this Society, and must receive a report recommending their admission as worthy and desirable from the Standing Committee on Medical Ethics, to which such application shall be referred."

The Committee further recommend the following amendments :

2. To amend Chapter I., Section 3, requiring the term of office of delegates to conform to that of the classification made by this Society :

"The term of office of delegates is three years, and as nearly as possible one-third of the whole number is elected annually, the period of service to correspond with that of the Society or College which they represent as shown in the classification of this Society."

3. To amend Chapter I., Section 4, requiring service for the full term of delegacy :

"Delegates who have served as such for three years, during which they have attended and registered at two annual meetings of this Society, become eligible for election as permanent members." [Amendment in *italics*.]

4. To amend the same section :

"Presidents of County Medical Societies are, during their term of service, members *ex-officio*, with the privileges of honorary members."

5. To amend Chapter III., Section 6, defining and adding to the duties of the Committee on Ethics; given in full as amended, amendment in *italics* :

"There shall be a Standing Committee on Ethics, consisting of three members, to which may be referred by the County Medical Societies all questions connected with medical ethics, or such other questions at issue that may arise in County Medical Societies, and the decisions of this Committee on such questions shall be binding till reversed by this Society. Applications from Voluntary Medical Societies for admission to representation in this Society shall be referred to this Committee for consideration as to their being granted. This Committee shall report to this Society at each annual meeting the decisions they have made during the year."

6. To amend Chapter V., Section 8. To conform the phraseology to existing law :

"As it is desirable that every reputable physician should become a member of his County Medical Society, special efforts should be made by Presidents and other officers of the several county societies in the State to enroll all such as members of their societies."

The report was accepted and a discussion of the proposed amendments was participated in by Drs. A. Jacobi, Daniel Lewis, L. Duncan Bulkley, A. Walter Suiter, and F. C. Curtis. Each amendment was severally adopted by a two-thirds vote.

Dr. DANIEL LEWIS raised the question as to the effect of the amendment relating to eligibility to permanent membership upon those who had served as delegates for two years under the pre-existing law; the President decided that the amendment could not be retroactive.

The Committee on Medical Ethics, Dr. JOHN S. WARREN, Chairman, reported through the Secretary that no complaints had been presented for their consideration. Accepted.

Dr. A. JACOBI presented the following

REPORT OF THE COMMITTEE ON PRIZE ESSAYS.

Your Committee are unanimous in their opinion that the essay presented for their consideration, on "Neuroses of the Stomach," bearing the motto "Qui patitur," is the result of the careful work of a writer who is fully conversant with the subject he treats of. The chemical part exhibits particular diligence. Many experiments are detailed which it is true show negative results mostly, but will save time and trouble to future experimenters. For diagnostic purposes the essayist takes the umbilicus as the centre for localization. We do not take it that the expert practitioner

should be limited to that single point; nor are we quite certain that the illustrations accompanying the manuscript really represent the stomach and nothing else.

In the opinion of the author, in common with other writers on the same subject, "the clearest conception of gastric neuroses may be had by distinguishing two general classes characterized by depression and excitement, respectively." One of the frequent symptoms of the latter is superacidity. We select a passage on this subject for the purpose of displaying before this audience both the style and the logic of the writer. He says:

"Three methods have been suggested to antagonize superacidity—meat and other albuminoids to exhaust the hydrochloric acid in forming organic compounds; alkalis to form neutral salts; water to dilate the irritating secretion. But these same means, while doing away with the present acidity, call forth a greater secretion.

"Successful treatment must go to one extreme or the other. Either the stomach must be kept almost constantly engaged or it must be resting, with no stimulus of any kind to call forth its glandular activity. In the latter case, the rectum may be depended on for nutrition for a few days, and meanwhile the store of chlorides must be depleted. Salt should be interdicted. Whatever water is allowed should be distilled, and the writer would still further recommend the use of the hot-air bath to remove salines through the sweat ducts. The later treatment should include tonic and hygienic measures, having in mind not so much the stomach as the overwrought nervous system."

Your Committee, while not objecting to such chemical and physiological theories and advice based thereon as are detailed in the above, think that in neurotic superacidity the "overwrought nervous system" is exactly and almost exclusively the point of attack for the physician. More gastric neuroses are probably cured, or at least relieved, by change of scene and life, by weaning a child, by no longer bearing children incessantly, sometimes by marriage, by proper employment, by active or passive exercise, and by cold-water treatment, or other hydrotherapeutic measures, than by medicinal remedies or other treatment directed to the stomach. Among the drugs mentioned in connection with this part of the work we miss zinc preparations and the occasional administration of small doses of opium.

As far as the surplus acid is concerned, we beg to suggest that in many cases, particularly in those in which neurotic and catarrhal disturbances are mixed, the acid is not so much hydrochloric, but acetic, butyric, caprylic, etc. In these cases relief can be procured by administering from time to time, and principally a few minutes before meals, such antacids as do not contain carbonic acid. Not infrequently, some time, say half an hour after the meal, hydrochloric acid can be given to advantage.

In connection with gastric neuroses your Committee ought to refer to rumination, which is characterized by the author as follows: "It is the power of voluntarily aspirating the contents of the stomach. Those who have this power usually consider the practice a great pleasure. There is no reason for counting it as a disease." One member at least of your Com-

mittee states that, in his experience among both the old and the young, rumination was always one of the symptoms of general neurosis or hysteria.

The scientific and theoretical tendencies of the writer never prevent him from returning to practical questions and the needs of the practitioner. Nor is he, while trying to solve the problems connected with his very specialistic subject, onesided enough to overlook the dependence of abnormal functions of the stomach with the lesions of other organs. Here is an example:

"Atonic and subacid dyspepsia may depend on renal insufficiency. In well-marked cases of Bright's disease there are usually cardiac and hepatic complications, so that the circulatory derangement induces a gastric catarrh. In acute and in insidious chronic cases of nephritis, the stomach, without developing any organic lesion, becomes an eliminating rather than a digesting cavity."

In regard to the presence of hydrochloric acid in malignant disease of the stomach we quote from him what many of us have been convinced of long ago:

"It is convenient to remember that acidity is increased in typical cases of round ulcer, that it is decreased in mild cases of gastritis, and absent in most severe cases of gastritis and of cancer. But the notion that lack of hydrochloric acid is pathognomonic of cancer has been disproved. Cases of cancer verified by autopsy may be cited to show that this disease may be compatible with a normal or even an increased acidity; and, while the writer has personal knowledge of only one such case, he has a list of at least thirty examinations of stomach contents in which the ordinary types have shown a complete absence of hydrochloric acid, but in which the subsequent history has removed all suspicion of malignancy. In fact, the entire absence of hydrochloric acid occurs in a surprising number of single examinations."

Of great practical importance is the following extract:

"In general fevers, acute gastritis, advanced chronic gastritis with anorexia, in carcinoma, and, in fact, in almost every disease as death draws near, the formation of ferments fails. The great commercial value of pepsin is based on a misconception."

This reference to the misconceptions in regard to the value of pepsin as a remedy in general fevers and different forms of gastritis, your Committee recommend to the attention of this audience. But we do not share the opinion of the author "that a stomach which cannot furnish its own pepsin should not be regarded as a digestive cavity." There is no, or but little, secretion of pepsin and hydrochloric acid, both belong together, in those diseases; but the stomach remains still a digestive cavity fit to transform farinaceous foods with the aid of lactic acid, which, even in the absolutely normal state of things, is the first to be secreted and to act.

Among the remedies in gastric neuroses the author speaks of electricity. He thinks the interrupted current is of service, and has very little doubt of its "penetrating" power. But he does not go beyond attributing to the internal administration of the Faradic current anything but decided men-

tal effect. It is known, however, that Einhorn and others electrify the gastric cavity for remedial purposes, but, on the other hand, also that Meltzer denies altogether the transmission through the neighboring tissues of the electrode applied to a mucous surface. There is disagreement.

After these preliminary remarks, part of which had to be critical beyond being merely reportorial, your Committee beg leave to pronounce their verdict. There are two reasons for which any prize essay should be crowned. The first is the tender of a reward for work well done, for a paper either replete with new ideas and facts, or at least suggestive, and enlarging the horizon of the reader; the second is encouragement both to the writer himself and those who in future mean to share both labor and honor. From all of these points of view your Committee declare the essay submitted to their decision to be worthy of the prize offered by the Medical Society of the State of New York.

A. JACOBI,
HENRY HUN,
W. S. CHEESMAN,
Committee.

The report of the Committee was accepted, and on opening the envelope accompanying the essay it was found to contain the name of Dr. A. L. BENEDICT, of Buffalo, to whom the prize was awarded.

Dr. F. C. CURTIS presented the report of the Committee on Publication, which was accepted. [See reports.]

Dr. LUCIEN HOWE presented the following report of the Special Committee on the Law Concerning the Duties of Nurses in Cases of Ophthalmia Neonatorum:

It is well known that purulent conjunctivitis of infancy produces about one-fifth of all the blind in the asylums, and equally well known that if proper precautions had been taken promptly in an early stage of the disease nearly every one of these unfortunates would have been spared a life in darkness, and the State would be spared the expense of supporting them. Accordingly, in 1890, a law was passed by the Legislature entitled "An Act for the prevention of blindness" which read as follows:

SECTION 1. Should any midwife or nurse having charge of an infant in this State notice that one or both eyes of such infant are inflamed or reddened at any time within two weeks after its birth, it shall be the duty of such midwife or nurse so having charge of such infant to report the fact in writing within six hours to the health officer or some legally qualified practitioner of medicine, of the city, town, or district in which the parents of the infant reside.

SEC. 2. Any failure to comply with the provisions of this Act shall be punished by a fine not to exceed one hundred dollars, or imprisonment not to exceed six months, or both.

SEC. 3. This Act shall take effect on the first of September, eighteen hundred and ninety.

One or two prosecutions were attempted under this law, but as the nurse in those instances declared that they did not "notice" that the eyes were inflamed the statute was supposed to be imperfect in that form.

The next year the Society for the Prevention of Cruelty to Children was preparing a general law to cover various crimes against children, and, in order to remedy the difficulty in the law just quoted, it caused that one to be repealed, and instead simply inserted a clause in this their new general law, which reads as follows :

" Being a midwife, nurse, or other person having the care of an infant within the age of two weeks, neglects or omits to report immediately to the health officer or to a legally qualified practitioner of medicine of the city, town, or place where such a child is being cared for, the fact that one or both eyes of such infant are inflamed or reddened whenever such shall be the case, or who applies any remedy therefor without the advice or except by the direction of such officer or physician, etc.

" The violation of this statute is punishable as a felony, and it is the duty of the District Attorney to institute proceeding in the name of the State and without any cost to the persons making the complaint when on application to him he brings the facts before the Grand Jury."

The practical result has been that, although convictions *can* be obtained with some difficulty, the penalty is neither sufficiently well defined nor sufficiently severe, and even nurses who plead guilty to its violation escape with a very light sentence or none at all. Still worse, a considerable number of violations of the law undoubtedly occur without attracting any notice. This has been due to the ignorance of the law on the part of the nurse or doctor, and often to the fact that parents, especially of the poor and ignorant classes, hesitate to appear before the District Attorney for fear of offending the nurse or incurring some expense; or, when physicians know of the law, they often hesitate, for some reason or other prefer not to be identified with the prosecution of nurses who otherwise perhaps have been faithful servants.

In order, therefore, that the law as it stands might be as effective as possible, this Society, at its last annual meeting, appointed a committee whose duty it should be to take into consideration the existing law for the prevention of blindness, and to take steps toward its enforcement.

It was not contemplated that they should commence any crusade against nurses, but rather that they should warn them of their duties and call the attention of physicians to the law, and especially was it intended that in different parts of the State there might be some one practitioner familiar with the law and with its operations, in order that, when it was violated by the midwives, the parents or the physician in charge might know of some medical man to whom to turn at once for counsel or for action. This plan has been carried out as fully as the circumstances seemed to require.

We have, therefore, called the attention of midwives still more thoroughly to the existence of the law. We have issued a circular letter to a considerable number of them and to physicians, pointing out the obligations they are under, citing cases in which convictions have taken place, and offering to report cases and to assist in the prosecution if necessary. In this way many have been reminded of their responsibilities, and an example has been made in one case at least, that of Anna Radell, of 517 Sherman Street, Buffalo. Although the mother of the blinded child was afraid for some reason to go to the District Attorney's office, the case was reported, the nurse indicted by the Grand Jury, placed under bonds for five hundred dollars,

and, though the Judge reserved sentence when she pleaded guilty, her example has had a wholesome effect upon her kind.

As it is apparently unnecessary to have a standing committee in regard to any one law, and as the statute at present in force is cumbersome and weak, this Committee would respectfully recommend :

First. That the members of the Committee on Hygiene be requested to hold themselves in readiness to report to the proper legal authorities any cases of violation of the present law whenever the facts shall come to their knowledge, to watch the prosecution and report to their respective medical societies any cases where the District Attorney fails to act with requisite promptness and energy ; and,

Second. This Committee also recommends that the Committee on Legislation be requested to obtain, if possible, another special law for the prevention of blindness in this State which shall be without the fault in the first one enacted in 1890, and which shall have a more definite and greater penalty prescribed than in the existing law of 1891.

Respectfully submitted,

LUCIEN HOWE,
PETER A. CALLAN,
WM. C. WEY.

The report was received and its recommendations adopted.

Dr. M. D. MANN, of Buffalo, said : Some years ago the profession of Erie County found that many women were attended in confinement by midwives, and among them were flagrant instances of malpractice. The enactment of a law was secured in 1895, providing for a Board on Midwifery in Erie County, under which much good has been accomplished, the incompetent midwives being thrown out of practice after examination, and others being induced to take instructions. The law should be extended to the entire State. He moved that a Committee of three be appointed, and that they be directed to draw up a bill for establishing a BOARD OF EXAMINERS IN MIDWIFERY in each county of the State for regulating and restraining the practice of midwifery, and that they submit the bill to the Committee on Legislation for introduction to the State Legislature.

The motion was adopted, and the following committee appointed : Drs. M. D. Mann, of Buffalo ; J. M. Winfield, of Brooklyn ; and W. G. Macdonald, of Albany.

Dr. CHARLES N. COX, of Brooklyn, called the attention of the Society to a bill introduced in the Legislature by Dr. George W. Brush, Member of Assembly from Kings County, relating to the *cutting of ice from rivers*. On motion, this was referred to the Committee on Hygiene, to report at this meeting.

Subsequently Dr. L. S. PILCHER reported for the Committee in reference to this matter, that "in the judgment of the Committee on

Hygiene the cutting of ice from rivers under such restrictions as may be imposed by the health authorities of any district would be proper." The report was accepted.

Dr. WM. J. NELLIS, of the Committee of Arrangements, presented the names of invited guests, which will be found on a preceding page.

Dr. N. P. WOOD, of Northfield, Mass., Delegate from the Massachusetts Medical Society, was presented to the Society by the President; he responded, extending the greetings of his Society.

Dr. HENRY R. HOPKINS, of the Business Committee, introduced the program for the meeting, and stated that the reading of papers would be limited to twenty minutes, and discussion to five minutes for each participant.

Dr. L. DUNCAN BULKLEY, of New York, read a paper, "Notes on the Use of Permanganate of Potassium in the Treatment of Diseases of the Skin."

Dr. W. P. MASON, of Troy, read a paper, "Water and its Relation to Disease."

Discussion by Drs. L. S. Pilcher, of Brooklyn; A. Jacobi, of New York; G. V. R. Merrill, of Elmira; E. H. Bartley, of Brooklyn; F. W. Shaffer, of Gloversville; H. S. Drayton, of New York; Albert Vander Veer, of Albany; and L. E. Blair, of Albany.

Dr. M. A. CROCKETT, of Buffalo, read a paper, "Sepsis of the New-born."

Discussion by Drs. A. Jacobi, of New York, and Charles Jewett, of Brooklyn.

Dr. CHARLES JEWETT, of Brooklyn, read a paper, "The Question of Puerperal Self-infection."

Dr. A. WALTER SUITER, of Herkimer, read a paper, "A Medico-legal Note."

The Society took a recess until 2.15 P.M.

FIRST DAY.—*Afternoon Session.*

The Society was called to order by the President.

Dr. MAURICE J. LEWIS presented the report of the Committee on Legislation. [See Reports.] Report received.

Dr. A. JACOBI asked for the reading of the bill referred to in the report or that portion of it which referred to the preliminary academic requirements of students in New York State Medical Colleges.

Dr. LEWIS stated that it differed from the present law in the statute book only in that it permitted the colleges through the regents to admit students for the first year of their study conditionally, but required that all these conditions should be met before the student

entered upon his second year of study. He stated further that the bill was the outcome of numerous discussions and much correspondence between and on the part of educators throughout the State, and that it had the support and advocacy of the regents.

Dr. JACOBI objected to this feature of the bill, and moved that the report of the Committee be adopted, and that the Society be placed on record as being opposed to this one feature thereof.

Further discussion was ruled out of order by the President on the question being called for, and the motion of Dr. Jacobi was carried.

The Committee of Nomination was announced, as follows:

Appointed by the President.—Dr. Matthew D. Mann, of Buffalo.

First District.—Dr. C. W. Townsend, of New Brighton.

Second District.—Dr. Philander Collard, of Sing Sing.

Third District.—Dr. Herman Bendell, of Albany.

Fourth District.—Dr. C. M. Lefler, of Gloversville.

Fifth District.—Dr. W. A. Vincent, of Three-Mile Bay.

Sixth District.—Dr. Daniel S. Burr, of Binghamton.

Seventh District.—Dr. E. L. Mooney, of Syracuse.

Eighth District.—Dr. Floyd S. Crego, of Buffalo.

Dr. J. L. HEFFRON, of Syracuse, read a paper, "Shall the State Attempt to Control the Spread of Tubercular Disease?"

Discussion by Dr. A. Jacobi, of New York, and Dr. E. F. Brush, of Mt. Vernon.

A "Discussion on Early and Latent Syphilis in Infants and Young Children" followed.

Dr. GEORGE T. ELLIOTT, of New York, read a paper, "Diagnosis and Treatment."

Dr. B. SACHS, of New York, read a paper, "Nervous Manifestations."

Dr. L. DUNCAN BULKLEY, of New York, read a paper, "Early and Latent Syphilis in Infants and Young Children."

General discussion by Dr. Emil Mayer, of New York, and Dr. E. D. Fisher, of New York.

Dr. GAYLORD P. CLARK, of Syracuse, read a paper, "The Equilibrium Function of the Ear."

A "Discussion on Diseases of Intra-uterine Life" followed.

Dr. E. H. GRANDIN, of New York, read a paper, "Diseases of Intra-uterine Life on the Part of the Mother."

Dr. P. W. VAN PEYMA, of Buffalo, read a paper "Eclampsia."

Dr. CHARLES W. ELIOT, President of Harvard University, delivered an address on "Medical Education of the Future."

On motion of Dr. W. S. Ely, a vote of thanks was extended to

President Eliot for his most interesting, instructive, and brilliant address.

The Society then took a recess until 8 P.M.

FIRST DAY.—*Evening Session.*

The Society was called to order by the Vice-President, Dr. William Maddren, of Brooklyn.

Dr. MAURICE J. LEWIS read the report of the State Board of Medical Examiners, which, on motion, was accepted and adopted. [See Reports.]

Dr. GRACE PECKHAM MURRAY, of New York, read a paper, "Tetanoid Hysteria."

Discussion by Dr. W. C. Krauss, of Buffalo, and the author.

Dr. NATHAN JACOBSON, of Syracuse, read a paper, "Treatment of Malignant Disease in So-called Cancer Institutions."

Discussion by Drs. L. D. Bulkley, of New York; F. W. Shaffer, of Gloversville; W. S. Ely, of Rochester; I. N. Goff, of Cazenovia; and the author.

In connection with the subject the following resolution was offered by Dr. L. D. Bulkley, and adopted:

Whereas, Serious evils have often resulted to the people and to the profession from the existence and operation of certain private medical institutions for the treatment of cancer and other diseases.

Resolved, That the Committee on Legislation be directed to prepare and to endeavor to secure the passage of a bill by the Legislature placing all such institutions under the care of the State Board of Health, in the same manner in which all private institutions for the care of the insane are under the care of the State Commissioner on Lunacy.

Dr. H. R. HOPKINS, of Buffalo, presented the subject of "Alcoholism and Public Health."

Dr. A. WALTER SUITER offered, in connection with the subject, the following, which was adopted:

Whereas, The Medical Society of the State of New York is ever mindful of the evil results, to individuals and to the community, of the abuses of stimulants and narcotics, and is ever ready to co-operate with and encourage intelligent efforts to prevent such abuses; and

Whereas, The Society is familiar with the recent attempts to force upon our public school system the task of teaching our children the chemistry, the toxicology, and the pathology of the alcoholic stimulant and narcotic habits; and

Whereas, This Society is in entire sympathy with the probable motives of

the promoters of this law, but has profound convictions of its inexpediency. Therefore,

Resolved, That our Committee on Legislation be and the same are hereby instructed and directed to use all honorable efforts to bring about the repeal or essential modification of the law of our State relating to this subject.¹

Dr. J. H. HUNT, of Brooklyn, read a paper, "The Evolution of Pathology," illustrating it with lantern photographs of those who have developed the science, and with illustrations from their works.

Adjourned at 10.15 P.M.

SECOND DAY.—*Morning Session.*

The Society was called to order at 9.30 o'clock by the President, and the minutes of the previous day were read and approved.

Dr. LUCIEN HOWE, of Buffalo, presented the

REPORT OF THE COMMITTEE ON THE PRESIDENT'S INAUGURAL ADDRESS.

The Committee to which was referred the recommendations in the Inaugural Address of the President would report that they have considered the various and important subjects to which attention was called, and deem it appropriate for the Society to take action as follows:

1. To *resolve* that the Medical Society of the State of New York heartily approves of the action of the Legislature in appropriating five thousand dollars for the Medical Department of the State Library, and, in view of the advantage which this is to the public health, would ask that a similar amount be appropriated for the same purpose this year and annually in the future.

2. To *resolve* that this Society express to the Board of Regents a sincere appreciation of the efforts to make the Medical Department of the State Library practically useful, and also recommends that the Committee on Medical Library be requested to arrange with the Director, Mr. Dewey, to issue travelling libraries of medical books to communities where several physicians reside, with the usual restrictions governing other travelling libraries sent out by the Director.

3. To *resolve* that this Society approves of the sentiments expressed in the President's Address concerning the relations of the Medical Society of the State of New York to the American Medical Association, and is ready to co-operate in any plan compatible with the dignity of both organizations, whereby existing differences could be adjusted in the interests of professional harmony and in accordance with the liberal spirit of the age.

4. Inasmuch as a considerable number of the members are in favor of changing the place of meeting from Albany to some other city, at least as

¹ These resolutions, as also that of Dr. Bulkley relating to cancer institutions, were acted upon in executive session Wednesday, but are introduced here in connection with the papers to which they were related.

an experiment once, this Committee deem it advisable not to make any definite recommendation, although the majority is in favor of such a change, but ask the Society to express its own opinion independently upon this important and mooted point.

5. To *resolve* that a special committee be appointed to consider the present laws regarding physicians as expert witnesses, and to report concerning this, and also concerning provisions of the code with reference to professional communications in courts.

LUCIEN HOWE,
WILLIAM BROWNING,
DANIEL LEWIS,
C. S. PARKHILL,
Committee.

On motion, the report was accepted, and the first three and the last recommendations adopted without discussion. With reference to the fourth,

Dr. WM. BROWNING moved that the by-laws relating to the place of meeting be suspended, and that the next annual meeting be held in Buffalo. He said that he made this motion merely as a tentative measure, and mentioned Buffalo as one of the eligible cities in the western part of the State; the home of the Society should be in Albany.

Dr. H. R. HOPKINS thought that this was a geographical society whose representation is based on the division of the State into senatorial districts; it is a part of the government of the State, and its proper place of meeting, as of the Legislature, is at the Capital of the State.

Dr. DANIEL LEWIS, of New York: For many years the State Medical Society has been a power in the control of the practice of medicine, and it has been thus influential because it is not a movable body, but has a permanent meeting-place in Albany. Having been for years a member of the Committee on Legislation, he felt certain that the Society would lose its influence over medical legislation if it should meet variously about the State.

Dr. LUCIEN HOWE, of Buffalo, did not believe we would lose our influence over legislation by meeting occasionally elsewhere, while it would aid us greatly in cultivating the acquaintance and eliciting the interest of that portion of the profession which now seldom attends our meetings. The hotel accommodations in Albany are also insufficient.

Dr. L. D. BULKLEY, of New York, offered reasons why New York would not be satisfactory as a meeting-place, other attractions diverting from the meetings and affecting the attendance.

Dr. A. VANDER VEER, of Albany, when President of the Society, had recommended in his inaugural address holding occasional meetings in other portions of the State, and was surprised at the decided way in which the committee on his address had reported against the suggestion.

While appreciating Dr. Bulkley's objection to New York, he thought it would be an advantage to form new acquaintances by meeting at times in the western part of the State.

Dr. HERMAN BENDELL, of Albany, expressed a similar opinion, and thought the experiment of meeting elsewhere could do no harm and might result in good.

Dr. A. WALTER SUITER moved to lay the subject of change of place of meeting on the table, and the motion was carried.

Dr. J. B. RANSOM, of Dannemora, presented the report of a Special Committee, appointed at the last meeting of the Society [see pp. 23 and 224, *Transactions*, 1895], to take into consideration recommendations made in a paper then read by Dr. Ransom for an improvement in the methods of obtaining medical expert testimony in cases where insanity was made the plea of defense, and to report upon the most feasible plan for obtaining such testimony, as follows:

Preamble and Resolution Submitted to the Medical Society of the State of New York by a Committee appointed by said Society to Report upon the Most Feasible Plan of Improving the Present Methods of Obtaining Medical Expert Testimony.

The Special Committee appointed at the last meeting of this Society to report upon the most feasible plan by which the present methods of introducing medical expert testimony can be improved respectfully submit the following report:

Your Committee, recognizing the difficulties which lay in the way of formulating any plan within the Constitution of the State, have corresponded quite extensively with qualified members of both the legal and medical professions, and believe that in submitting the following preamble and resolution they present a consensus of such opinions held with reference to this subject which, under present constitutional restrictions, affords the best method of obtaining medical expert testimony:

Whereas, the present method of obtaining medical expert testimony tends to lessen the value of such testimony and to bring the medical profession into disrepute; therefore, be it

Resolved, That the Medical Society of the State of New York would recommend the enactment of a law by the Legislature providing for the appointment of experts by the Courts, and that only physicians of repute in the particular branch of medical science to which the question calling for expert opinion relates shall be appointed; that the function of the experts so appointed shall be advisory, and the number thus appointed shall be such as to adequately represent the Court and both sides of the question at issue, as in the judgment of the Court shall seem necessary; that the experts so appointed shall have full and free access to all the evidence in the case, as well as access to the plaintiff or defendant in person as the case may be, if the issue involves his mental or physical state. That the experts shall submit to the Court for transmission to the jury a report in writing

setting forth their conclusion, and the facts in evidence on which such conclusion is based; that the cross-examination of such experts shall be limited to the facts and opinions embraced in their testimony as embodied in their report, and that their compensation shall be fixed by the Court at a rate that is reasonable for professional services of such a nature.

Most respectfully submitted,

J. B. RANSOM,
CARLOS F. MACDONALD,
H. E. ALLISON,
S. B. WARD,
E. D. FISHER,

Committee.

The report was received and the recommendations adopted and referred to the Committee on Legislation.

Dr. J. M. VAN COTT, of Brooklyn, offered the following resolutions, which were adopted:

Resolved, That the progressive and splendid achievements of our Health Departments in the means afforded and the rules enforced by them for disinfection of premises and portable articles contaminated by contagious disease are a just source of pride to the cities of our State.

That we may justly claim to rank with the foremost cities of the world in the adoption by our Health Departments of the latest scientific methods of differential diagnosis in both tuberculosis and diphtheria, and the manufacture and dispensing of diphtheria antitoxin.

That we heartily indorse the prompt and efficient action taken by the Commissioners of Health in the various cities of the State of New York in securing vaccination in public schools and other places threatened with smallpox in the last two years, believing that any less determined effort on their part would have endangered the public safety, leaving us menaced with the ravages of epidemic disease.

That in expressing our sense of obligation to the Commissioners of Health in the cities of our State for their untiring and unflinching and thoroughly scientific work, we urge that they be afforded every facility and protection by the Legislature and the law in the discharge of their duties and the enforcement of the regulations of their departments.

That these resolutions be spread upon the minutes of this Society, and copies printed and sent to the Legislature and members of the Bench throughout the State.

Dr. DAVID MYERLE, of Brooklyn, Secretary of the Medical Society of the County of Kings, presented the following communication from that Society regarding the publication of the *Index Medicus* by the Government, with a resolution that such action be advocated:

At a regular meeting of the Medical Society of the County of Kings held in December, 1895, a resolution was adopted advocating the publica-

tion of the *Index Medicus* by the Government, and instructing the delegates to the State Society to advance the measure before that body. The following letter, compiled by a committee, was formulated for the purpose of sending to Representatives in Congress urging them to move in the matter :

"As a special committee of the Medical Society of the County of Kings, the oldest and largest medical organization in the city of Brooklyn, N. Y., we beg leave to present to our Representatives in Congress certain facts regarding a matter of public interest that is within their province to act upon. In common with most men familiar with the subject we believe that the Government should take up and continue the issue of the publication known as the *Index Medicus*. Some of the reasons therefor are as follows :

"1. It is a continuation of the *Index Catalogue*. This latter was published by the Government. Together with the *Index Medicus* it has acquired a world-wide reputation, and has done much to bring credit to our nation and to advance medical science in America. It is but natural and in order that the Government continue what it has so advantageously begun.

"2. "The *Index Medicus* is not for any class, but for all schools of medicine. It is as much for one part of the country as for another. It is in the widest sense for the general good.

"3. It is not a money-making undertaking for anyone, but is one of the greatest advancers of the codification of medical knowledge—both scientific and practical in the best sense.

"4. Ample experience has shown that it cannot be made self-supporting. For some fifteen years now it has been kept up by private subscription and voluntary contributions, but these prove too uncertain to guarantee its permanency, and in any case it is not right that such an organ of common good be continued forever at the expense even of those nobly inclined.

"5. The work of preparing the material for it has always been done under Government auspices, hence it is but right that the country publish it and receive full credit for it.

"6. It brings in exchange a vast amount of literature to the library of the Surgeon-General's office. At the same time, if issued with the privilege of private subscription at a fair rate, the actual expense of the undertaking would not be very great.

"In view of all this, therefore,

"*Resolved*, That the Congressional Representatives from the county be urged to secure such legislation as will speedily obtain the publication of the *Index Medicus* by the Government, thus insuring to the profession that scientific reliability and permanence of issue so vital to the literary and practical interests of the profession and the public."

Dr. A. VANDER VEER, of Albany, expressed the opinion that as provision has been made by private subscription it would be better at present to let well enough alone.

Dr. WILLIAM BROWNING, of Brooklyn, said a special call has been made more than once to support the *Index Medicus* as a private publi-

cation; would it not be better to have it under the control of the National Government?

The communication was, on motion, received and approved.

Dr. L. DUNCAN BULKLEY presented the Report of the Committee on Nominating to the Board of Regents Candidates for Vacancies on the State Board of Medical Examiners, representing this Society, recommending the following as such candidates: Drs. George R. Fowler, of Brooklyn; William C. Wey, of Elmira; A. Walter Suiter, of Herkimer; Willy Meyer, of New York.

The report was accepted and the recommendation adopted.

Dr. M. D. MANN presented the report of the Committee on Nominations recommending for election to permanent membership the following whose applications had been regularly presented through the Secretary:

Drs. Charles O. Baker, Auburn; Silas J. Banker, Fort Edward; David A. Barnum, Cassville; Guy C. Bayley, Poughkeepsie; Joseph B. Bissell, New York; H. J. Boldt, New York; R. Brinsmade Bontecou, Troy; William A. Burgess, Utica; Walter Franklin Chappell, New York; Lewis A. Coffin, New York; James S. Cooley, Glen Cove; Newton F. Curtis, White Plains; Alexander Dallas, New York; Henry T. Dana, Cortland; S. L. Dawes, Saugerties; Theodore Dunham, New York; Henry Strong Durand, Rochester; Daniel C. Dye, Utica; Elmore E. Elliott, Catskill; Arthur Lyman Fisk, New York; John Addison Fordyce, New York; William D. Garlock, Little Falls; Hermon C. Gordinier, Troy; Joseph B. Hulett, Middletown; James Edward Kelly, New York; Judson G. Kilbourn, Utica; Louis N. Lanehart, Hempstead; Henry C. McLean, Brooklyn; Charles Mason, Peekskill; Edward L. Mooney, Syracuse; William A. Moore, Binghanton; John Moroney, Elmira; John W. Morria, Troy; William James Morton, New York; J. Montgomery Mosher, Ogdensburg; Thaddeus Halsted Myers, New York; W. O. Plimpton, New York; Julius B. Ransom, Dannemora; De Witt C. Rodenhurst, Philadelphia; Leander Swartwout, Prospect; T. Oliver Tait, Rochester; C. F. Timmerman, Amsterdam; Wisner R. Townsend, New York; C. A. Von Ramdohr, New York; David Boyd Ward, Poughkeepsie; George T. Wetmore, New York.

On motion, the report was accepted and the applicants were duly elected permanent members.

Dr. WILLIS E. FORD, of Utica, read a paper, "Vaginal Hysterectomy without Ligations."

Dr. ALBERT VANDER VEER, of Albany, read a paper, "Complications in Abdominal Surgery Requiring Intestinal Anastomosis."

Dr. M. D. MANN, of Buffalo, read a paper, "Sloughing of Uterine Fibroids after Abortion and Labor."

Dr. J. GARRIGUES, of New York, read a paper, by invitation "Technique of the Improved Cæsarean Section."

General discussion by Dr. W. Gill Wylie, of New York, who read some notes on "Abdominal *versus* Vaginal Hysterectomy;" by Drs. H. J. Boldt, of New York; M. D. Mann, of Buffalo; W. G. Macdonald, of Albany; A. H. Goelet, of New York; J. Riddle Goffe, of New York; A. T. Bristow, of Brooklyn; B. Farquhar Curtis, of New York; W. E. Ford, of Utica; A. Vander Veer, of Albany.

Dr. WILLY MEYER, of New York, read a paper, "Early Diagnosis of Tubercular Kidney."

Dr. REYNOLD W. WILCOX, of New York, read a paper, "The Symptoms and Diagnosis of the Indigestion of Starchy Foods."

Discussion by Dr. L. Duncan Bulkley, of New York.

Adjourned.

SECOND DAY.—*Afternoon Session.*

The Society was called to order at 2.30 o'clock by the President.

Dr. T. HALSTED MYERS, of New York, read a paper, "Congenital Dislocation of the Hip, with Exhibition of a Case Successfully Treated."

Dr. M. J. LEWIS, of New York, offered the following resolution, which was adopted:

The Medical Society of the State of New York, in annual session assembled, herewith reaffirms its oft-declared principle that the study of medicine should be carefully and jealously guarded in the interests of the public and for the good name of the profession.

We still hold to the view that *before* admission to the medical schools of this State students shall have *fully completed* the preliminary academic requirements outlined in existing laws and as proposed in the bills prepared after consultation with the medical schools of the State, the regents, officials, and the Committee on Legislation of this Society.

We also, in that spirit of fairness which should animate any body of serious minded men, realize that legislation is justifiable which will relieve the embarrassment occasioned students who, in good faith and under then existing laws, matriculated at medical colleges, and thereafter found preliminary requirements increased contrary to the spirit of the law enacted in 1895, provided the integrity of the law itself is maintained and the principles of this Society for the advancement of academic and medical standards are not lowered.

A discussion on "The Present Status of the Surgery of the Brain" followed.

Dr. E. D. FISHER, of New York, read an opening paper on this subject.

Dr. M. ALLEN STARR, of New York, read a paper, "A Contribution to Brain Surgery, with Special Reference to Brain Tumors."

Dr. CHARLES L. DANA, of New York, read a paper, "The Value of Craniotomy or Craniectomy and its Indications in Conditions of Idiocy and Imbecility."

Dr. B. SACHS, of New York, presented a paper, read by Dr. Joseph Collins, "Surgical Treatment of Epilepsy."

Dr. GEORGE WOOLSEY, of New York, read a paper, "Craniotomy for Imbecility and Epilepsy."

Dr. JAMES W. PUTNAM, of Buffalo, read a paper on the same phase of the discussion.

Dr. WILLY MEYER, of New York, read a paper, "Heteroplasty with Celluloid to Cover Defects in the Skull."

General discussion by Drs. Joseph Collins, of New York; Floyd S. Crego, of Buffalo; Edward B. Angell, of Rochester.

Dr. W. C. KRAUSS, of Buffalo, read a paper, "Treatment of Sciatica with Nitroglycerin."

Prof. JAMES H. ETHERIDGE, of Chicago, presented an Address on the topic "Deficient Excretion from Kidneys not Organically Diseased in Some of the Disorders Peculiar to Women."

Discussion by Dr. L. Duncan Bulkley, of New York.

On motion of Dr. HENRY L. ELSNER, a vote of thanks was extended Prof. Etheridge for his interesting and valuable address.

Dr. M. J. LEWI, of the Committee on Legislation, said: It will interest the Society to know that a hearing has just been concluded by the Judiciary Committee of the Assembly on Assembly Bill No. 307. This Bill makes provision for the indorsing the diplomas by the State Board of Regents of physicians from other States who have been graduated three or more years, without examination. Drs. Daniel Lewis, George H. Fox, A. Walter Suiter, Eugene Beach, M. J. Lewi, Lewis A. Coffin, and Edmund N. Liell, members of this Society, appeared in opposition to the Bill. When the argument was finished a member of the Committee assured him that the bill would not get out of the Committee.

Adjourned.

SECOND DAY.—*Evening Session.*

The Society assembled at 8.15 o'clock in the Senate chamber of the State Capitol, the Vice-President presiding.

The President, Dr. ROSWELL PARK, of Buffalo, delivered the Annual Address "On the Study of Pathology by Comparative Methods."

Dr. HERMAN BENDELL moved a vote of thanks to the President for his exceedingly interesting and scholarly address; which was carried.

The Society then adjourned to a reception in the State Library, and to inspect the newly established Medical Department of the Library.

Following this, at 9.30, the annual dinner was held at the Kenmore Hotel.

THIRD DAY.—*Final Session.*

The Society was called to order at 9.30 A.M. by the President.

Dr. HERMAN BENDELL presented the

REPORT OF THE COMMITTEE OF NOMINATION.

To the Medical Society of the State of New York:

GENTLEMEN: Your committee would respectfully report the following unanimous nominations:

For President.—James D. Spencer, Watertown.

For Vice-President.—L. Duncan Bulkley, New York.

For Secretary.—F. C. Curtis, Albany.

For Treasurer.—Charles H. Porter, Albany.

Standing Committees:

For Committee of Arrangements.—William J. Nellis, Albany; William Hailes, Albany; Reynold W. Wilcox, New York.

For Committee on By-laws.—H. D. Wey, Elmira; W. J. Herriman, Rochester; F. C. Curtis, Albany.

For Committee on Hygiene.—Henry R. Hopkins, Buffalo; Lewis S. Pilcher, Brooklyn; Daniel Lewis, New York; Willis G. Macdonald, Albany; O. W. Peck, Oneonta; Lucien Howe, Buffalo; A. M. Campbell, Mt. Vernon.

For Committee on Legislation.—A. Walter Suiter, Herkimer; Maurice J. Lewi, New York; J. M. Winfield, Brooklyn.

For Committee on Ethics.—Charles Jewett, Brooklyn; Eugene Beach, Gloversville; John L. Heffron, Syracuse.

For Committee on Prize Essays.—Abraham Jacobi, New York; Henry Hun, Albany; William S. Cheeseman, Auburn.

For Committee of Publication.—F. C. Curtis, Albany; F. D. Bailey, Brooklyn; M. D. Mann, Buffalo; Charles H. Porter, Albany.

For Delegates to State and Other Societies:

To the British Medical Association.—Charles L. Dana, New York; M. Allen Starr, New York; James P. Boyd, Albany; John M. Bigelow, Albany.

To the Canadian Medical Association.—A. B. Miller, Syracuse; C. S. Parkhill, Hornellsville; T. F. C. Van Allen, Albany; F. L. Classen, Albany; George M. McCombs, Clayton; E. H. Bridges, Ogdensburg; Wendell C. Phillips, New York; E. L. Mooney, Syracuse; Philander Collard, Sing Sing.

To the Ontario Medical Association.—M. D. Mann, Buffalo; Roswell Park, Buffalo; Floyd S. Crego, Buffalo; Nathan Jacobson, Syracuse; John O. Roe, Rochester; T. Oliver Tait, Rochester; H. A. Barney, Belmont; George H. Oliver, Dickinson Centre; Walter F. Chappell, New York.

To the Massachusetts Medical Society.—C. S. Merrill, Albany; Herman C. Gordinier, Troy; J. H. Glass, Utica.

To the Connecticut Medical Society.—George Henry Fox, New York; Edward F. Brush, Mt. Vernon; James H. Curry, Shrub Oak; Daniel H. Cook, Albany.

To the Medical Society of New Jersey.—H. S. Drayton, New York; Egbert H. Grandin, New York; T. Kirk Perry, Albany; H. J. Boldt, New York; Clinton B. Herrick, Troy; H. E. Mereness, Albany; Walter B. Chase, Brooklyn; Evarts M. Morell, Yonkers.

To the Medical Society of Virginia.—William B. De Garmo, New York; Evarts M. Morell, Yonkers.

To the Mississippi State Medical Association.—Daniel S. Burr, Binghamton.

We suggest that the Secretary be empowered to add to the list the names of any members desirous of attending the meetings of these or other Societies.

MATTHEW D. MANN,
Chairman.

HERMAN BENDELL,
Secretary.

The report was accepted and those placed in nomination were duly elected.

Dr. JAMES D. SPENCER, the newly elected President, was invited to the platform and expressed his thanks for the honor conferred.

Dr. W. G. MACDONALD, of Albany, read a paper, "Reorganization of the Coroner System."

Dr. RUDOLPH A. WITTHAUS, of New York, presented his report as member of a committee appointed at the last meeting to represent this Society upon a Committee of the New York Bar Association to devise means for changing the legislation regarding the coroner system, as follows:

Your committee appointed to confer with a committee of the New York State Bar Association as to what legislation should be adopted to effectuate the changes in the amended Constitution of this State in reference to the office of coroner, respectfully reports as follows:

That a bill was drafted by the Bar Association which was by your committee submitted to and approved by the General Committee on Legislation of this Society, and which was introduced by Hon. J. B. Stanchfield in the last Legislature. This bill was referred to the Judiciary Committee of the Assembly, and was there so amended in many important particulars as to the power of appointment and otherwise that it was thought best not to press its passage last year.

The Bar Association has continued its committee at its meeting held in this city last week, and said committee has been in conference with your

committee during the past three days with the result that all agree that a proper and efficient measure of reform can be agreed upon and will be adopted by the present Legislature if it have the support of the Associations representing the legal and medical professions of the State.

Several of the Judges of the Supreme Court have taken a deep interest in the matter and have kindly consented to assist in the preparation of a satisfactory bill and in procuring its passage at the present session of the Legislature.

Your committee, therefore, asks that it be continued with power to confer and co-operate with your Committee on Legislation and the Committee of the State Bar Association, and to use all proper efforts to procure the enactment of a measure which shall provide that the powers and duties now devolved by law upon coroners shall be vested in officers appointed by the Court for a fixed term, and who shall be duly licensed and registered physicians, separating so far as possible the *quasi* judicial functions of investigation from those of medico-legal examination.

Respectfully submitted

R. A. WITTHAUS.

The report was received and discussed, all favoring the recommendations contained in it, by Dr. Lewis Balch, of Albany; Hon. Tracy C. Becker, of the State Bar Association; and Dr. Herman Bendell, who moved its adoption and also the appointment of an auxiliary committee of twenty-five or thirty to act with the special committee.

The motion was carried and the following auxiliary committee was appointed by the President: Drs. Herman Bendell, Albany; E. F. Brush, Mt. Vernon; Charles Mason, Peekskill; Lewis Balch, Albany; Daniel Lewis, New York; A. Jacobi, New York; D. B. St. John Roosa, New York; H. R. Hopkins, Buffalo; P. Collard, Sing Sing; Seneca D. Powell, New York; John O. Roe, Rochester; D. S. Burr, Binghamton; W. C. Wey, Elmira; H. L. Elsner, Syracuse; Henry Flood, Elmira; William Browning, Brooklyn; L. S. Pilcher, Brooklyn; A. Vander Veer, Albany; S. B. Ward, Albany; W. G. MacDonald, Albany; C. S. Parkhill, Hornellsville; Willis G. Ford, Utica; James D. Spencer, Watertown; Frank S. Low, Pulaski; Joseph W. Eddy, Oswego; Eugene Beach, Gloversville; Evarts M. Morrell, Yonkers; John T. Wheeler, Chatham; A. Walter Suiter, Herkimer.

Dr. WILLIAM BROWNING, of Brooklyn, read a paper, "Development of Muscular Atrophy on a Basis of Old Infantile Spinal Paralysis, a Favorable Type."

Dr. M. A. VEEDER, of Lyons, read a paper, "Neuritis Complicating Dislocations of the Shoulder and Elbow."

Discussion by Dr. H. S. Drayton, of New York.

Dr. WILLIAM HAILES, of Albany, read a paper, "Difficult Perineal and Supra-pubic Lithotomy, Two Cases."

Dr. M. L. FOSTER, of New York, read a paper, "Some Notes on Trachoma."

Dr. J. M. WINFIELD, of the Business Committee, read by title the following papers: "Serum Therapy," by Dr. E. H. Wilson, of Brooklyn; "The Pathology of Infantile Syphilis," by Dr. Ernest Wende, of Buffalo; "Scorbutus in Infants," by Dr. H. S. MacLean, of Brooklyn; "Abdominal or Vaginal Celiotomy—Which?" by Dr. J. W. Whitbeck, of Rochester; "Some Rare Complications of Appendicitis," by Dr. Herman Mynter, of Buffalo; "Distinctive Features of Railroad Surgery," by Dr. R. S. Harnden, of Waverly; "Diabetes and Acetonuria in Children," by Dr. W. S. Cheesman, of Auburn; "Value of Animal Extracts in the Treatment of Nervous and Mental Disease," by Dr. Floyd S. Crego, of Buffalo; "The Surgical Treatment of Retroversions and Retroflexions, with Special Reference to Vaginal Fixation," by Dr. H. N. Vineberg, of New York; "Treatment of Aspiration Pneumonia by Drainage by Inversion," by Dr. W. W. Seymour, of Troy; "Abscess of the Frontal Sinus," by Dr. J. P. Creveling, of Auburn; Second Report on a Case of Functional Albuminuria," by Dr. Eli H. Long, of Buffalo; "How to Prevent River and Stream Pollution," by Dr. Thomas E. Satterthwaite, of New York; "Inquiries Relating to the Comparative Value of Expectorants and Cough Remedies," by Dr. J. K. Crook, of New York; "Dislocations of the Patella, and a Machine for its Relief," by Dr. A. M. Phelps, of New York; "Surgical Treatment of Retro-deviations of the Uterus," by Dr. A. H. Goelet, of New York; "A Case of Nephrectomy with Some Interesting Features," by Dr. C. W. Townsend, of New Brighton; and "Intubation in the Treatment of Chronic Laryngeal Stenosis," by Dr. J. O. Roe, of Rochester.

Dr. D. S. BURR, Chairman of the Committee on Credentials, read the following report:

Your Committee on Credentials would report, as shown by the Register, a total of 224 Delegates and Permanent Members to have been in attendance at this meeting of the Society, and 45 Invited Guests who have signed their names as such. A review of the Register for the past three years shows as follows: In 1894 there were 216 members and delegates, and 67 members by invitation; in 1895, 207 members and delegates, and 26 members by invitation; in 1896, 224 members and delegates, and 45 members by invitation.

Respectfully submitted,

DANIEL S. BURR,
T. F. C. VAN ALLEN,
M. L. BATES,

Committee.

Dr. HERMAN BENDELL, of Albany, said: In view of the very successful and interesting meeting which is about to end, the members of this Society are certainly greatly indebted to the presiding officer for the able, the dignified, and, if I may so express myself, the scientific and literary manner in which he has discharged the duties of his office. I therefore move that a vote of thanks be extended the President and also to the Business Committee for the faithful discharge of their official duties.

The motion was carried unanimously.

The PRESIDENT: I thank you heartily for the passage of this resolution and for the sentiment which prompted it. I think it is generally conceded that the meeting has been a successful one, but I want to put in a positive disclaimer of more credit than belongs to one of a number of men who have worked in your interest. I feel myself under very heavy obligation to the Business Committee and to the Secretary and Vice-President, who have most cordially assisted me in discharging the duties of my office. It would be unfair if I took more than a small amount of credit for the success of the meeting. We are also much indebted to the Committee of Arrangements, especially for their securing this hall in which to hold our meetings.

If there be no further business, a motion for final adjournment is in order.

On motion the Society then adjourned.

FREDERIC C. CURTIS,
Secretary.

The next annual meeting of the Society is to be held at Albany, N. Y., on January 26, 1897.

REPORTS.

1. TREASURER'S REPORT.

*The Medical Society of the State of New York, in account with the Treasurer.
General Fund.*

Balance in Treasury as shown by		Amount brought forward	\$2282 15
Treasurer's report, Feb. 4, 1894	\$1562 15	Schenectady 1895 . . .	5 00
Received from the County Medi-		Seneca 1894 and 1895 . .	10 00
cal Societies, Institutions,		Steuben 1895 . . .	10 00
and individuals, as follows:		Suffolk " . . .	5 00
Albany 1895 . . .	20 00	Tompkins " . . .	5 00
Allegany 1896 . . .	5 00	Ulster " . . .	10 00
Broome 1895 . . .	5 00	Utica Medical Club, 1895 .	5 00
Cayuga " . . .	10 00	Albany Medical College, 1895	5 00
Chautauqua 1896 . . .	10 00	Medical Department University	
Chemung 1895 . . .	5 00	Buffalo, 1894 and 1895 . .	10 00
Chenango " . . .	5 00	Rochester Pathological Society,	
Clinton " . . .	5 00	1895 . . .	5 00
Columbia " . . .	5 00	Syracuse Academy of Medicine,	
Delaware " . . .	5 00	1895 . . .	5 00
Dutchess " . . .	10 00	New York Academy of Medicine,	
Essex " . . .	5 00	1895 . . .	25 00
Franklin 1893, 1894 and 1895 .	15 00	Elmira Academy of Medicine,	
Fulton 1895 . . .	5 00	1895 . . .	5 00
Greene " . . .	5 00	Utica Library Association, 1895 .	5 00
Herkimer " . . .	5 00	Society of Physicians, Village of	
Jefferson " . . .	5 00	Canandaigua, 1895 . . .	5 00
Kings 1896 . . .	105 00	College of Medicine, Syracuse	
Livingston 1893, 1894 and 1895	15 00	University, 1895 and 1896 .	10 00
Madison 1895 . . .	5 00	New York Post-Graduate School	
Monroe " . . .	15 00	and Hospital, 1895 . . .	5 00
Montgomery " . . .	5 00	Long Island College Hospital,	
New York 1895 and 1896 .	325 00	1895 . . .	5 00
Oneida " . . .	15 00	College of Physicians and Sur-	
Onondaga 1895 and 1896 .	30 00	geons, New York, 1895 . .	5 00
Orange 1895 . . .	10 00	Bellevue Hospital Medical Col-	
Orleans " . . .	5 00	lege, 1895 . . .	5 00
Otsego 1894 and 1895 .	10 00	Medical Association, Northern	
Putnam 1895 . . .	5 00	New York, 1895 . . .	5 00
Queens 1896 . . .	15 00	Long Island Medical Society,	
Rensselaer 1895 . . .	15 00	1895 . . .	5 00
Richmond 1896 . . .	5 00	Amsterdam Medical Society, 1895	5 00
St. Lawrence " . . .	10 00	Medical Association City of Mt.	
Schoharie 1895 . . .	5 00	Vernon and environs, 1895 .	5 00
Amount carried forward	\$2282 15	Amount carried forward	\$2447 15

TREASURER'S REPORT.

51

Amount brought forward	\$2447 15	Amount brought forward	\$2447 15
Initiation fees as permanent members from R. W. Wilcox, C. S. Parkhill, A. L. Beahan, J. M. Winfield, A. T. Van Vranken, Ernest Wende, J. Hasbrouck, A. B. Miller, C. H. Avery, W. Browning, Eveline P. Ballantine, Geo. E. Law, S. R. Morrow, J. M. Van Cott, F. W. Zimmer, Wm. L. Cuddeback, T. F. C. Van Allen, W. G. Macdonald, W. I. Gordon, George Edebohls, F. Beebe, G. O. Williams, G. H. Whitcomb, J. J. Walsh, Geo. McNaughton, W. T. Clute, Geo. T. Wetmore,		C. S. Cole, F. L. Clessen, J. E. H. Nichols, A. H. Buckmaster, W. P. Northop, J. Walter Wood, L. C. Gray, A. La Monte, W. S. Cheesman, Judson C. Smith (37)	185 00
		Received from Permanent Members for annual dues:	
		2 for 1892	10 00
		4 " 1893	20 00
		19 " 1894	95 00
		217 " 1895	1085 00
		4 " 1896	20 00
		1 " 1900	5 00
		Interest accrued on deposit in Savings Bank	28 90
Amount carried forward	\$2447 15	Total receipts, General Fund	\$3896 05

Publication Fund.

Received for			
7 volumes	<i>Transactions</i> , 1891		\$9 25
6 "	" 1892		7 75
22 "	" 1893		28 00
108 "	" 1894		135 75
346 "	" 1895		432 75
Total			\$618 50
Total receipts: General Fund			\$3896 05
" " Publication Fund			618 50
Total			\$4509 55

Expenditures.

The expenditures for and on account of the Society, from February 5, 1895, to January 28, 1896, were as follows:

F. C. Curtis, services as Secretary	\$350 00
F. C. Curtis, expenses of office	68 20
C. H. Porter, services as Treasurer	150 00
C. H. Porter, postage, envelopes, etc.	20 10
C. H. Porter, paid for labor in handling <i>Transactions</i>	9 50
C. H. Porter, expressage on <i>Transactions</i>	8 50
C. H. Porter, box opener	1 50
William J. Dornan, printing <i>Transactions</i>	1262 20
S. H. Wentworth, printing, etc.	63 75
Committee on Legislation, expenses of	76 60
Amount carried forward	\$2010 35

TREASURER'S REPORT.

Amount brought forward . . .	\$2010 85
Nat. Express Co., expressage on <i>Transactions</i> . . .	12 30
D. and H. Canal Co., freight on <i>Transactions</i> . . .	5 46
Frederick Carman, stenographer . . .	75 00
Spencer and Banker, attorneys . . .	15 00
Albany Calcium Light Co. . .	16 00
W. M. Stetson, stationery . . .	3 95
Ten Eyck & Lansing, insurance . . .	17 90
W. A. Choate, rent . . .	75 00
Trunk Line Association, special agent . . .	17 00
Mary E. Stonehouse, addressing circulars, etc. . .	19 50
E. J. Keating, assistant janitor . . .	15 00
P. J. McGraw, services at meeting . . .	8 00
A. P. Muir, page . . .	6 00
Arthur O'Hara, page . . .	6 00
Lang Stamp Works . . .	1 10
Total . . .	<u>\$2303 56</u>

Recapitulation.

Total receipts . . .	\$4509 55
Total disbursements . . .	<u>2303 56</u>
Balance in Treasury . . .	<u>\$2205 99</u>

2. REPORT OF THE MERRITT H. CASH PRIZE FUND.

Accrued interest at date of last report . . .	\$260 80
Accrued interest from January 1, 1894, to January 1, 1895 . . .	26 70
	<u>\$287 50</u>
Prize awarded to A. L. Benedict . . .	100 00
	<u>\$187 50</u>

The Prize Fund (\$500.00) and interest (\$187.50) are on deposit in the Albany Savings Bank.

ALBANY, N. Y., January 28, 1896.

CHARLES H. PORTER,
Trustee Merritt H. Cash Prize Fund.

3. REPORT OF THE COMMITTEE OF PUBLICATION.

The Committee of Publication awarded the work of printing the *Transactions*, after submitting it to competition to two publishing-houses, to William J. Dornan, printer, of Philadelphia.

The work was commenced March 14th, and the volumes were sent out September 15th. An edition of 1000 copies was printed, the cost being \$1198.75. The Secretary sent 425 copies to members, exchanges, and medical libraries, as directed by the By-laws.

The volume contains thirty-eight papers presented at the last meeting, including the Merritt H. Cash Prize Essay, six obituary sketches, a chronological list of permanent and honorary members, and the usual revised lists of county medical societies members.

It is recommended that the chronological list of members be printed at intervals of five years.

Respectfully submitted,

F. C. CURTIS,
WILLIAM WARREN POTTER,
F. D. BAILEY,
CHARLES H. PORTER,
Committee.

4. REPORT OF THE COMMITTEE ON LEGISLATION.

The Committee on Legislation would respectfully report as follows :

The Legislature of 1895 has restored the penal clause of 1890 in its integrity, and as a result criminal prosecution of the violators of its provisions is again possible. The concert of action on the part of central medical bodies in this State, and the agitation of the issue by our own Society were potent factors in accomplishing this result.

The legal contest having been settled, the Legislature again passed the bill transferring the care of the insane of New York County to the State. The State tax rate will for the time being be increased because of this legislation, but the ultimate gain for the public and to their unfortunate insane wards will more than recompense for the temporary and only seeming extravagance.

The question of a satisfactory law governing the practice of midwifery by unlicensed persons is still in *status quo*. The main difficulty has been to frame a measure satisfactory to the needs of the various sections of the State and equally capable of being administered in metropolis, city, town, and village. A bill is in the course of preparation which is likely to satisfy the various demands of the situation, and when completed will be vigorously pushed through the Legislature by the officials of this Society who will be reinforced in its advocacy by all those who know the many dangers and frequent horrors of the existing system.

In keeping with the Society's instructions a bill is now before the Legislature having for its purpose the regulation of the standard for admission to our State medical colleges. Before its introduction in the Senate this

54 REPORT OF STATE BOARD OF MEDICAL EXAMINERS.

measure was modelled and remodelled till all contending interests had had an opportunity to be heard. As a final step the Regents appointed a special committee to give a hearing to medical college faculties and to all others interested. As a result we feel that we are about to have a law passed which will greatly redound to the benefit of the public and to the credit of the profession.

With the same regularity which marks the convening of the Legislature, there has again appeared the annual bill for wrecking existing medical laws and for undoing the sacred work accomplished in advancing the standard of medicine. The means primarily adopted consist of Assembly Bill No. 307, introductory No. 294. The innocent method devised in this proposed law for admitting anybody and everybody to practise is on a sliding scale—i. e., in order to be exempt from the licensing examination the applicant need be a graduate of three-years' standing and then slide in from a neighboring State, have his diploma indorsed by the "President" (*sic*) of the Regents, and then legally embark in practice. This measure is, however, only an entering wedge, and we look for a more scientific display in ingenuity from the advocates of similar methods of administration during the legislative session of 1896.

The bill affecting coroners and coroners' duties was duly presented to the last Legislature. It was a measure drawn by the representatives of the State Bar Association, Prof. Witthaus, and your Committee on Legislation. A thorough discussion of the points in the bill was had before committees of the Legislature, in lay publications, and in medical and in law journals. The bill failed of passage, but your Committee has hopes this year of being able to pass a law based on similar principles, but differing somewhat in details.

The question of providing a legal method for the employment of expert witnesses is one which will require much time and ingenuity in settling. We refer the Society respectfully to the report of the President of the Society, who covered the points in his address delivered this morning.

Very respectfully submitted,

SENECA D. POWELL,
Chairman.

A. WALTER SUITER,
M. J. LEWIS,
Secretary.

5. ANNUAL REPORT OF THE STATE BOARD OF MEDICAL EXAMINERS.

During the year ending December 31, 1895, five examinations for medical licenses have been held in the State of New York. 711 candidates applied for admission to these examinations, of which number 58 were found to be deficient in one or more of the essential requirements for such admission. Of the 653 examined, 8 elected to appear before the Eclectic Board, 63 elected to appear before the Homœopathic Board, and 582 elected to appear before the State Board. 482 received licenses, while 171 were rejected. The Eclectic Board rejected 1, or 12 per cent.; the Homœopathic Board rejected

8, or 12 per cent.; and the State Board rejected 162, or 27 per cent. Of these, the failures were in obstetrics, pathology, chemistry, surgery, therapeutics, practice and materia medica, anatomy, physiology, and hygiene, in the order named.

Many foreigners who failed at first examination, after becoming more familiar with our language, easily passed the tests applied on a second or third trial. The wisdom of requiring these tests in writing and in English, as now exacted by law, is manifest in the reports to the health officers throughout the State. In former years many of our licensed practitioners were so deficient in English that inaccurate and incomplete reports of cases were of frequent occurrence. Now they are rare, and ere long they will have entirely ceased.

The syllabus in its completed form is now in print and is largely in use by students and teachers as the basis for study and instruction. Future editions of this work will be corrected to meet the advances in medicine.

Many States have passed laws governing the practice of medicine which are based on the principles on which our law is formulated, and as a matter of protection the few States not yet in line with these principles will be forced to legislate similarly. At present each State legislates for its own citizens in medical affairs, having the constitutional right so to do, and in consequence the worth of a license is in the main confined to the State in which it is granted. The acknowledged superiority of our methods exempts our licentiates from this wholesale classification. Most of the other States in the Union accept licenses issued by this Board, indorsing the same on the payment of varying fees. New Jersey places the highest tax on our licenses. This State recognizes the worth of the parchment, but requires a fee of \$50 for indorsing it. Pennsylvania charges but \$10 for a similar service. It would be highly desirable were the other States in the Union so to elevate their standards that under our existing law we should be justified in indorsing their licenses, thus making needless the re-examinations that now obtain whenever practitioners coming from neighboring States apply to us for the legal right to practice within our borders. The legislative enactments on medical matters show that wherever any legislation has been accomplished in the various States the result has been in line with our well-known and well-recognized principles. At the present time we indorse no licenses issued by other State Medical Boards because the standards, either academic or medical, or both, are not sufficiently high to warrant us legally in doing so.

Last year we had the pleasure of reporting that the medical licensing laws had been factors in creating new chairs of medicine in the faculties of medical colleges and of prolonging the hours of study. This year it is our pleasure to report that, instead of three-year courses, four-year courses have now been adopted by the Medical College and Hospital for Women, the Woman's Medical College of the New York Infirmary, College of Physicians and Surgeons, New York Homœopathic Medical College and Hospital, and the Medical Department of the University of the City of New York, and it is safe to say that within a few years no medical college in this State will

grant a degree till the student shall have attended at least four full courses of lectures.

Attention is called to the fact, as showing the trend of public sympathy, that the State Associations of Dentists and Veterinarians have secured legislation compelling candidates for license to practise dentistry and veterinary medicine to meet the same requirements as those established last year for medical students. Probably this action will end the annual efforts of a small minority to reduce the present medical standards.

The administration of the affairs of a new organization is often attended with many difficulties, and what is simple theoretically is likely when put to the test to seem complex. The members of the Board are frank to acknowledge that all to whom the new law applies may not be pleased, but no efforts are spared to administer this law in the fairest and most impartial manner. Criticism of our work is freely invited. We aim to make our questions as fair for the recent graduate as for the practitioner of twenty years' standing. Fifteen questions are asked in each topic of which the candidate must answer only ten, and among the fifteen questions asked in each topic are those applying to theory as well as to practice.

Through an arrangement completed during the present month, the question papers are now printed in a room in the Regent's office and do not leave this room till they go out under seal, thus securing a safety hitherto unknown in any examination system.

To meet the few cases where the personal element has been introduced, by a new rule agreed on at this session, no member of the Board will examine or report on any paper the identity of the writer of which has been made known to him.

The following officers have been elected for the ensuing year :

President.—Wm. C. Wey, Elmira.

Secretary.—Maurice J. Lewi, 78 W. 82d St., New York.

Syllabus and Question Committee.—George R. Fowler, Brooklyn.

M. J. Lewi, New York.

Respectfully submitted,

MAURICE J. LEWI,
Secretary.

THE ANNIVERSARY ADDRESS.

THE STUDY OF PATHOLOGY BY COMPARATIVE METHODS.

BY ROSWELL PARK, M.D.,
BUFFALO.

Nulla autem est alia pro certo noscendi via, nisi quam plurimus, et morborum, et dissectionum historias tum aliorum, tum proprias collectas habere, et inter se comparare.—MORGAGNI.

THE most pleasant, if at the same time the most trying, of the numerous duties which your By-laws entail upon your President is the preparation of an annual address, in which he shall set forth before you the recent progress of our art, or other matters of general professional interest which may prove, if not helpful, at least temporarily entertaining. As I have glanced over the annual addresses of my predecessors, and have noted the wide range of subjects considered by them, and have fully appreciated the value of their work and the eminence of their personalities, I have stood aghast at the task thus set for me. It may happen, however, to any earnest and faithful student of medical science who has made no brilliant discoveries of his own, and who has shown himself nothing more than a zealous traveller along pathways made for him by the feet of others, to view, as it were, regions into which as yet but few paths lead, or which have been untrodden as yet by the footfalls of his fellow-men. Into such regions he may yearn to explore, yet be without the necessary training or preparation. Yet, seeing these, he may sometimes do good by pointing out to others where their own explorations may be required and their time well spent. It must be in some such capacity, if at all, that I must serve you to-night.

I have, consequently, selected for the topic of my address a subject upon which I have at least reflected long and seriously, and have

time and again yearned for light that either was not provided or was too obscurely hidden, and in such a way as to be concealed from easy appreciation. My plea, then, with you to-night is for a further extension of methods of comparative study in the investigation of disease and departure from the normal standard. Some such illustration, perhaps, as this may serve better to make known my meaning: There have been various methods devised of studying the languages, living and dead. An extreme in one direction has been to take the advanced grammar, and thus, beginning at the top of the linguistic ladder, gradually work down—a method by which even to-day too many young men waste their time over the study of Latin and Greek, as well as of French and German. The other method, the so-called natural method, has been to begin with the simplest parts of speech, to deduce grammatical rules as the scholar advances, and to carry him along by easy and progressive stages until, at the culmination of his studies, parts of speech and rules for their use come as naturally as do the words which are to be marshalled together into grammatical form. The introduction of methods like this has robbed the study of languages for the children of to-day of most of the terrors which they presented for the children of my generation. The same comparative methods are evident in all the best educational institutions, and are being constantly improved by the best educators. The tendency toward the comparative study of the various branches of science is perhaps happily illustrated in the recent appearance of a text-book on comparative geology (by Keyser). This, perhaps for the first time, does for geology what comparative study has accomplished for botany, zoology, etc. Most of the text-books on geology are confined to the geological phenomena of a single country, the rest of the world being dealt with in a very careless fashion. To be sure, this is in the main due to the fact that the writers worked within altogether too narrow limits, and have little or no personal acquaintance with conditions in countries which to them are foreign. Nevertheless, the key to the great geological problems of our earth is not to be found in any one region, but must be comprehensively viewed and studied. If, now, these methods be important in linguistic study, in geology, and in all the various branches where no one will deny their importance, how much more important are they for us in the study of the medical sciences? If we stop a moment to inquire why it is that this common-sense method of study, as all will allow it, has been so generally disregarded in the medical schools of

the world, the answer will probably be found in the utilitarian view, held by many, that the time is not sufficient to permit of beginning at the bottom and working up, and after all it is disease in the human race rather than disease in the lower orders with which we are especially to concern ourselves. Potent as is this view in the minds of most, it nevertheless does not permit of full justice to the subject, and should not be permitted to stand in view of the really higher interests of medicine.

While a man may be perfectly competent to reduce a fracture of a fibula, and quickly put the patient upon his feet with a useful limb, who has never heard that the fibula is a disappearing relic, and that in many of the lower animals it is a larger bone, there nevertheless is no reason why in the interests of higher medical education this fact should not be perfectly familiar to him and to all. The man who removes an ovarian tumor successfully and conducts his patient through a speedy convalescence must certainly be considered a competent practitioner of his art, though he may have no comprehension of the peculiar findings within such a tumor, and may be as much at a loss to account for the teeth, the hair, the rudimentary mammary gland, or other structures which he may find there as the original possessor of the growth. Does it follow, however, that he can be considered a really educated man if he prove himself thus ignorant? The surgeon who exposes a dermoid tumor within the cavity of the cranium may have the technical skill by which to remove it and secure a primary wound healing, and yet be utterly at a loss to account for its presence in that location. Is he to be content with his surgical skill, or are we to expect of him that he shall possess something more than this and be able to tell as much as anyone may know of the secret of such a growth?

I think you will all agree with me that such knowledge is most desirable, and that it really has a large degree of practical or utilitarian value. But how to get it and how to teach it is the great problem before us, and how to disseminate more widely the knowledge now possessed by a few is one of the tasks which the wise men of the present have to set themselves.

First of all, we cannot for one moment afford to lose sight of the fact that our bodies are but aggregations of cells, each of which has its own individuality, even to some extent its own autonomy. Every organized being is then a republic of cells, but it is not yet widely enough appreciated that, as in a republic of citizens, a little disturb-

ance in one region may bring about by most unexpected agencies a disturbance or even a revolution, so in the bodies alike of plants and animals cellular disturbance at one point is sure to affect to greater or less extent the entire economy. In the higher animal and vegetable forms, however, the cellular organization is altogether too complex to permit of a study of the conditions which so disturb inter-relation of parts. If we are, then, to acquire any knowledge or idea as to what goes on within such wonderfully complex organisms as our own, we must begin by the study of those which are vastly simpler. In this connection I want to lay before you as a model, in my estimation, of what such study should mean the *Researches on Inflammations*, by that indefatigable Russian biologist, Metschnikoff, who has for some years been so prominent a figure in the Pasteur Institute in Paris. If there be any one phenomenon concerning which we need more positive and exact notions than another, it seems to be this very one of inflammation. The changes attending it in complex organisms are so complicated and give rise to such wide diversity of disturbance, tissue-alterations, and results, that we cannot afford to disregard one thing concerning it which may be gained from any source. Although this has been conceded for centuries, and although John Hunter appreciated the fact, and like many others worked long and arduously at the solution of some of its attendant problems, it was Metschnikoff who, more than any other living man, in my estimation, has made the process clear, simply because he began to study it in the lowest forms of living beings. To anyone who will read his fascinating work, the advantages of this method will be made so clearly apparent that he will wish that every pathological laboratory had its corps of Metschnikoffs in order to pursue work along the same general lines and by the same methods. But for our purposes and in various ways I would go even further than this. I would say that the beginning of all pathological processes, as of all physiological, should be studied in the vegetable kingdom first, where may be found the parallels of all those changes which go to constitute disease, even of complex type, in the human race. The elements of plant-physiology may be reasonably mastered within a comparatively short time without going too deeply into the principles of ontogeny and phylogeny; but if the circulation, for instance, is to be studied, it certainly can be best studied under conditions where it is most simple, and I would vastly prefer to see the student trained to know how the sap makes

it way through the length and breadth of a tree before he begins to think of how the blood circulates through his own frame. It is better that he should work up to a knowledge of the circulation if his medical education is to be complete, than work down to the simple after having begun with the complex. After he has mastered the normal circulation in plants, he will then be in a position the better to appreciate what takes place when a plant is wounded, and he will learn to distinguish between the true hemorrhage of vegetable organisms and a true exudation, and the differences between mere outpour of vegetable juices due to solution of continuity, and the pathological secretions which take place when the parts have been irritated by parasites, exposure to injuries by vicissitudes of weather, or have had the character of their secretions materially, sometimes almost totally, altered by variations of surroundings, changes in soil, etc.

How much better, then, to begin studying the activities of cells in the lowest and most immature organisms first. If the study be begun in this way it will be seen that the formative activity of cells dominates over their secretive activity, and it will be found, for instance, that those cells which have passed out of the gland as waste products may remain and proliferate more or less independently. This, by the way, may be a factor in explaining the genesis of cancer; *e. g.*, in the breast. It will be seen, too, that the behavior of cells as well often as of organs (composed of them) depends in large degree upon the quantity and quality of nutritive material which is at disposal. Thus, among the bees it depends upon the nutrition supplied to the female larva whether it shall become a neuter or become a sexually perfect female.

There is one law, however, of cellular physiology which is apparently never violated, and that is, that a derivative of one germ-layer never by any chance develops a structure originally derived from another. Consequently, after differentiation of the blastodermic membranes no wholly indefinite cells are formed. Those cells which are thereafter formed can develop only certain tissues. But all these cells are directed by some unseen force, even when they appear uncontrolled, and in a suitable environment will always tend to arrange themselves in the form of the organism from which they originated. Thus, a small detached bit of hydra soon moulds itself into the complete shape of the parent organism. The property of selective assimilation seems to be possessed by cells in common, and those of a

given part appear to have the power of moulding adjacent material into cells after their own kind. This is shown by the fact that a tail is reproduced where there was a tail, and a leg, and only a leg, where there was a leg. These processes have been likened to those by which a crystal reproduces its lost apex when placed in a solution of identical material. The lower the animal or vegetable form the more complete is the power to reproduce lost parts; the higher we ascend the scale the more limited does this become, until in man the ability to reproduce lost parts is almost completely gone, and when noted at all is seen only during the beginnings of life or its early stages, at a time when there is still more or less embryonic tissue which can functionate. Thus, during the early periods of embryonic life there may be more or less complete reproduction of fingers after injury, though nothing of the kind occurs in adults. There are cases on record of reproduction of supernumerary digits after amputation, which seems the more remarkable because the normal digits have no such power of regrowth, the nearest approach being the occasional appearance of imperfect nails on finger-stumps after amputation. Simpson several times noted that arms amputated *in utero* by bands grew again to a certain extent, while in one case the extremity was divided into three minute nodules, on two of which small points of nails could be detected. This is probably as far as attempts of this kind have ever been observed in our own species. In the same way in plants, adventitious buds, like adventitious fingers in the foetus, differ from the normal only in respect to position. Such buds originate in the same way and have been found upon almost every part of plants. They sometimes develop in extraordinary numbers upon the stem and branches of trees owing to some interference with the vegetation of the normal buds. More easy adaptation of part to circumstance is, however, seen in the vegetable than in the animal kingdom. Dr. Hamel planted a willow with its branches in the ground and its roots in the air, and saw the roots become covered with buds, while the budding branches produced roots. Adventitious buds may also be found on the petiole, lamina, and other parts of the leaf. Thus the bud, like the ovum, is to be regarded as an individual vital centre. Parthenogenesis, which never occurs in the vertebrates, may be frequently seen in the vegetable, and buds apparently may arise where undifferentiated cells are present.

In either kingdom, however, so soon as cells begin to specialize

they lose the primary general function or power of reproducing the entire organism, apparently because all of the original protoplasm has been specialized and used up. In the higher organisms certain cells never attain high development, but remain always in a lowly organized condition and serve either as germs for reproducing the entire individual or for forming and maintaining various tissues and organs, remaining, as it were, in reserve. Such cells are found in all growing organs and tissues, and, according to Williams, are the only real cancer- or tumor-germs. Most of the specialized cells of an organism produce only those which are incapable of acting as germs for an entire individual; *e. g.*, epithelium always produces epithelium.

Since much of what I have to say to-night pertains to the genesis of tumors, it may be worth while to reiterate Williams's views to the effect that every phenomenon of neoplastic growth has its counterpart in the normal processes of evolution, and that the better we understand the latter the better we shall appreciate the former. On the one hand, there is continuous perfecting of bodily structure by differentiation; on the other, continuous transition from lower to higher types of development. Each individual reproduces in its own life the most important morphological changes through which its long line of ancestors has passed. In every act of reproduction a minute quantity of protoplasm is transferred from the producing to the produced offspring, and along with it the molecular condition peculiar to the parents; and upon this heredity depends. The persistence of impressions, or what has been called unconscious memory in protoplasm, is the property upon which, in ultimate analysis, the phenomena of heredity will be found to depend. Organisms which have undergone impressions under new conditions tend to return to the original structure or habits when restored to original surroundings. When we seek for the influence most potent to produce variation in protoplasm, we must agree with Darwin, who says: "Of all the causes which induce variability, excess of food, whether or not changed in nature, is probably the most powerful." Viewed in this light, the sudden development of a neoplasm in an otherwise healthy organism is the outcome of gradual and continuous changes in the evolution of the cells of the affected part, owing to minute and as yet unrecognizable changes in the nutrition of the cells. Regard for a moment the effect of too much or too little nourishment. Young trees, for instance, often remain sterile because of too rich soil and too much excess of fluids; while too warm a temperature

hastens the second sprouting, the necessary juices are kept away from the first, and fruit blossoms may be prevented from developing. Among the little insects known as plant-lice agamic multiplication continues throughout the summer if only external conditions—*i. e.*, weather and supply of nutrition—are favorable; but when the weather becomes cold and the supply of sap in the plant fails, fertilization of ova is again necessary.

But study vegetable pathology for a few moments, regarding plants as if they were animals and likening the sap to the circulating blood. Carrying out this analogy, the vegetable pathologists describe what they call *ischæmia* and even *necrosis* in plants, and show how these may occur from injury to the roots, from interference with circulation caused by grafting, from abusing the tree, from early frost, improper soil, etc. They show also the alteration in natural fluids in the presence of disease; and it is of some interest to know that the secretions of parts involved in necrotic or so-called cancerous changes contain gallic and humic acids. Furthermore, studying the effect of alterations in light and air, they describe conditions of plant life analogous to *chlorosis* and *icterus*, alleging perverted nutrition, usually in the direction of too much and too rich food with too abundant moisture as the causes of these conditions. They also describe what they call *dry gangrene*, while in the presence of *stasis* with decomposition of the fluids which should be circulating there is sufficient irritation with perversion of nutrition to influence cell-growth into the development of so-called cancer in trees.

In my estimation there is as much hope of getting light upon the vexed question of origin of tumors by the study of influences operating to produce them in plants and trees as from any other source. The influence of certain fungi in producing sclerotic changes in vegetable tissues is also very much in accord with what we know to result in animal tissues from the presence of parasites. There is, for instance, the peculiar fungus known as the *peziza*, which produces most extensive sclerotic changes, both internally and near the surface. The great beauty of studying disease in vegetable life is the abundance of material and the absence of sentiment concerning its utilization. A great deal of vegetable pathology is yet to be learned by the inoculation-method, since there is just as much possibility of deliberately infecting trees by artificial inoculation with various parasites, to them pathogenic, as there is in our pathological laboratories of infecting animals.

And here, by the way, the expert agriculturist or the student of scientific agriculture, horticulture, etc., in our agricultural colleges is a person whom the veterinarian and the human pathologist would do well to cultivate, since to such a one are known many facts of to him great practical importance, which yet have a significance reaching far beyond his environment and embodying general principles with which we ought to be equally familiar, although, sad to say, we seldom are. I often consider it a great pity that there are not societies where men in these various walks of life may get together and disseminate more widely a knowledge which physicians as such rarely, if ever, possess, but which could be by such communications made of great value.

For example, the reaction of vegetable tissue after wounds is even to physicians most instructive. If after bruising of a plant, for instance, the bruised portion be left *in situ* it decomposes easily, while the wound itself heals with difficulty or even not at all, and necrosis of surrounding tissue often follows. Is not this the exact counterpart of what one might say of wounds of the animal body? It is of passing interest even to remember that hailstones may produce injuries, contusions, etc., which shall materially affect the nutrition of a plant or tree, and that contused wounds made in this way may be followed by more or less disastrous results. There is also a difference between what we may call the bleeding of a tree and pathological secretion after certain injuries. The latter originates in and near the injured part; the chemical nature of the secretion is altered, and a variety of materials, to us most useful, are in this way produced, although the causes have in but rare instances been studied out. For example, the various resinous materials, and such substances as tragacanth, manna, and other gums, are all pathological secretions produced in consequence of more or less specific irritations. Then, again, open wounds in trees give peculiar opportunity for microbic infection or that by other parasitic fungi, which, as a rule, cause necrosis of the plant- or wood-tissue. Such infections, however, in trees rarely spread widely, and the resulting necrosis is for the most part local. Only those products of decomposition which are soluble are diffused into surrounding tissues, where their influence may be injurious. Hemorrhage, so-called, in plants is the result of a fresh wound, the peculiar juices, sap, etc., exuding, possibly to an extent so serious as to lead to the death of the plant. The most damaging exudate, however, is that of gum

from trees after their foliage is out ; the reason for which is that the exudate exerts such pressure that there is stasis, and even coagulation of fluids between the cortex and the woody part of the tree, by which circulation is impeded. Again, it often happens, as the result of frostbite during foliage, that the cortex (bark) may rupture and permit escape of this coagulated secretion from the disturbed part. All of which only makes things worse, since there is now thrown out a still more irritating secretion (often spoken of by agriculturists as chilblains), which not seldom forms an open cancer upon the tree. In a minor way, pathological flow of gum is also produced by the stings of beetles, and of many other insects which lay their eggs in the cortex, the lesion then being strikingly analogous to that produced beneath an animal's skin by the sting of certain insects, etc.

Yet different is the peculiar yellowish, sticky, sweetish-tasting substance, of unpleasant odor, often seen upon the upper surface of the leaves and stems of many plants, where it may gather within a few hours. This is commonly spoken of as "honey-dew" (melligo). It is an abnormal secretion of certain plants whose juices are rich in sugar. It is most commonly found in the spring after sudden changes of temperature, escaping from the cells, through the pores, upon the surface of the plant, where, combining with the moisture of the atmosphere, especially during the cool of the night, it is precipitated upon the surface, thus closing the pores from which it has escaped, and interfering with their function as well as with the growth of the plant. This may be washed off during a severe rain ; but if not removed by natural processes, is liable to ferment, it being quickly attacked by minute fungi. The benefit to infected trees and plants of severe rain and wind, which are thus destructive agents of these fungi and permit the re-establishment of normal vegetable function, is then most easily appreciated.

In plants and animals alike, the process of repair and the neoplastic tendency are closely allied, differing only in degree. The new growth of repair serves to replace that which has been lost ; while that of neoplasms is indefinite and knows no bounds, the subordination of local processes to tissue-necessities and to specific hereditary tendencies having been lost.

The *formation of tumors in trees* seems to me a subject of very great interest. All the woody tumors have been grouped in a general way under the term "xylomata," while among some of the botanists they are indiscriminately called cancer. In the majority

of cases the so-called cancers of plants occur around the sites of previous injury, where the natural process of healing has been interfered with, and where the cambium produces an abnormal amount of parenchyma instead of healthy wood. Lesions of vegetable tissue produced by frostbites are particularly liable to be followed by these xylomatous formations. They may also be produced by the stings of many of the small parasitic animals, like plant-lice. The pyrenomycetes are known to be the cause of some of the xylomata. In the populust remulus, for example, the stems and branches often show tumors of varying, even of large, size, the hypertrophy commencing in the cortex, involving all or only part of a limb, being followed by swelling of the wood proper, and later, perhaps, by destruction of the cortex by frostbite, with exposure of the wood beneath, necrosis ensuing. The importance of the lesions produced by exposure to cold is not generally realized. It is, moreover, of peculiar interest that trees inoculated with cancerous sprouts or grafts become themselves cancerous (Lucas). Lorauer has described two forms of so-called cancer in the apple-tree, both of which seem to result from frostbite—one a rose-like growth with a necrotic centre surrounded by terrace-like edges, enlarging yearly; the other, a closed form of growth appearing upon branches, attaining a size three or four times that of the plant, with a funnel-like depression, the edges of the original lesion rolling in toward each other instead of diverging as in the previous case. Physicians are made familiar with a very limited number of these xylomata when they study the materia medica of the astringents, and are told about the origin of gallic acid. The student is informed that the nutgall is the result of irritation produced by an insect, and that perhaps at least one hundred species of gall are known upon the oak; but here his acquaintance with the xylomata ceases, and he is taught no far-reaching lesson from this fact in vegetable pathology.

Perhaps the most instructive animal-parasites of trees and plants to watch and study are the so-called plant-lice, since they pass their whole lives upon plants and draw from them their nourishment. These little insects fasten upon the plant by suction, puncturing the part and producing an irritative action which is followed by a variety of lesions, from hypertrophy of irritated tissue to speedy necrosis. The hypertrophies may have the character of true galls. One form of plant mildew, indeed, is produced by these same little

animals, being in effect the empty sloughs which they leave behind and which remain as a white mass upon the green surface. These same plant-lice are the active agents in the production of certain tumors often spoken of as cancer. But it is especially the so-called blood-lice, which live in young plants and thrive best in fresh wounds, which lead to most marked neoplasms. The blood-louse is an almost motionless parasite, which attacks young plants upon wound-edges, where it finds the tissues thin enough to have ready access to the plant-juices. When this parasite has fastened, the cambium becomes more active and hypertrophied, while the plant-cells, being now exposed, absorb moisture and swell even to the point of bursting. By this means long, elliptical clefts are formed, and these often become the site of so-called cancers. It will thus be seen that nearly all, if not all, of the so-called xylomata are really of parasitic origin. It will not do, however, to argue too loosely from this fact that the same thing is true in the animal world. We at least have not yet sufficient evidence to make so positive a statement.

The xylomata have been divided by Williams into three main groups :

A. Discontinuous or circumscribed growths, to which the vague name of " knaurs " should be restricted. This includes nodules so often met in the bark of common trees. These are usually rounded swellings in the deeper part of the bark, varying in size from a pin-head to a cocoanut, usually encapsulated, often with fibro-vascular pedicles connecting broader portions with the woody tissues of the trunk or stem. These, on section, consist of dense wood showing all the structural elements of the tissue from which they spring, only atypically arranged. Most of these tumors arise from disorderly growth of adventitious or dormant buds, which may remain in quiescent state for years and then develop renewed activity. These tumors may even be utilized for purposes of propagation, as in the case of buds of some species of apples, which produce both roots and leaves in abundance.

B. Continuous tumors, corresponding to exostosis in animals, presenting as woody outgrowths of the trunk or plant. They may attain great size, weighing fifty pounds or more. They seem to arise by excessive local cell-proliferation of the cambium.

C. Totally new growths, presenting a surface thickly studded with shoots and stunted branches. This is a combination, in fact, of exostosis with diffuse bud-formation—that is, of the preceding forms.

For the cellular pathologist, then, a tumor in an animal or upon a tree is practically the same, it making no difference even whether it occur upon the bark, upon the leaf, or anywhere, provided only that a previous pathological lesion has occurred. The nutgall which arises in consequence of the puncture of an insect, the tuberous swellings which mark the spots on trees where the boughs have been cut off, and the wall-like elevation which forms around the border of the wounded surface produced by cutting down a tree, and which ultimately covers in that surface—all of these depend upon proliferation of cells just as abundant, just as rapid, as that which we perceive in the growing tumor in the human body. The process in plants conforms practically to that in animals, both being of the same general type.

Malignancy of tumor-formation is largely a process of cell-degeneration and incompetence. When in animals it begins in mesoblastic connective tissue, the more imperfect the cell-development the more of the round-celled type it assumes in consequence. Hence the malignancy of sarcoma is to be judged of quite accurately by the roundness and incompleteness of its component cells. In benign tumors the reproduction of cells is more orderly, but is not in harmony with the demands of the rest of the system. The simplest of all the body-tissues is its fatty tissue, and fatty tumors are the most frequent of all benign growths; while true gland-tissue, which is most difficult to irritate, furnishes the smallest number. True cancer has been described most attractively as a "parody upon the gland-tissue;" and it certainly is a hideous travesty of its kind. It occurs most often in tissue which has outlived its usefulness, like the mamma, the uterus, etc.; and it is in such tissue, for the most part, that true carcinoma, or the so-called "rebellion of the cells," occurs (Hutchinson), while epitheliomata occur also in worn-out tissue, usually under the stimulus of some irritation. Epitheliomata are rare among the lower animals as compared with man, and when met with at all occur most often in the domesticated animals and those in confinement. Sarcomata are common in all classes of animals, from the fish upward; but even these are more common among those ordinarily domesticated. (Possibly this is only an apparent prevalence rather than a real, because of much greater familiarity with animals in domestication.) Carnivorous animals are more prone to malignant diseases than are the herbivorous, while the reverse is true with regard to liability to tuberculosis.

Cartilaginous tumors, particularly in the breast, are much more common in animals than in man. The quadrumana, however, manifest but little disposition either to neoplasms or to tuberculosis.

In cancer atavism, or reversion to an earlier type, may be traced back to the hydroid stage, where simple fission is the prevailing method of multiplication; in consequence of which we have a longer-lived and more aggressive cell-growth, which we call malignant. If a mesoblastic cell be the ringleader instead of an epiblastic, we then have sarcoma with its less brilliant but more stable cellular achievements (Hutchinson).

These neoplasms are not peculiar, as will be seen and as has been seen, to man, nor even to animals, although it must be stated that epithelial neoplasms are of rare occurrence in the lower animals as compared with mankind, and that they are apparently more common among the domesticated than among wild animals. On the other hand, sarcomata have been met with in nearly all classes of animals, from fish upward, although these also occur most often among the domesticated. Dogs, horses, asses, and pigs are particularly liable to sarcoma of the testicle. Horses, especially those of light color, are most prone to melanotic sarcoma of the anal region. Horses are also quite often victims of psammoma in the brain. According to Rayer, carnivorous animals are more prone to malignant disease than herbivorous. The benign tumors, like fibroma, enchondroma, and osteoma, are almost as widely diffused as sarcoma. Fatty tumors are frequently seen in domesticated animals. Mammary fibro-adenoma among dogs and cats is fairly common, and chondroma of the mammary gland is much more frequent among animals than among man. Cystic ovaries are also common in the domestic animals.

Among the most remarkable phenomena pertaining to cells is the peculiar tendency to reappearance of traits and qualities peculiar to remote ancestors, and quite out of keeping with cells in their present locations. Sutton divides these into *vestigia*, or those affecting whole organs or races, and *degenerations*, or those affecting general groups of tissues. It is the partial reappearance of traits and qualities peculiar to some remote ancestor which we speak of as *vestigia*. Among these are most prominent, for example, the congenital malformations of the ear and the appearance of rudimentary or additional auricles. In fact, the whole arrangement of

the external ear shows atavism toward the type of the carnivora and herbivora, the rudimentary and now useless muscles pointing clearly to the movable ear of those orders. But the human ear points further back than this, and by its development from the remains of the first brachial cleft points distinctly to fish-ancestors and gill-covers, the auricle being the relic of the operculum. Other relics of the opercula appear in the appendages so well described by Sutton as cervical auricles—*i. e.*, the little tags which make their appearance along the anterior border of the sterno-mastoid. That these are not mere freaks is shown by the fragments of cartilage, muscle-fibres, etc., which they contain. These appendages may be cystic or open, forming diverticula to such an extent that fistulous passages may extend clear through to the pharynx, forming the so-called brachial fistulæ.

But it is rather to another aspect of the embryology of the head and neck, especially in its ontogenetic and surgical relations, that I would like for a few moments to invite your attention. Sutton has shown (*Journ. of Anat. and Phys.*, vol. xviii., p. 28, "A Critical Study of Cranial Morphology") that the bony framework of the skull, morphologically considered, is a mere addition to the original primary cranium, which is in reality represented by the dura. Very early in embryonic life the dura and the skin are in contact, while the basal and lateral portions of the cranium gradually chondrify, thus separating these two structures. We too often forget that the skin and dura are in contact along the various sutures, often for a year after birth, and that this close relation persists longest in the region of the fontanelles and the torcular. The practical bearing of this is that the formation of an intracranial dermoid, by inclusion within the rapidly growing cranium of a few dermal or epiblastic elements, is not difficult to understand. The pedicle of such a cyst or tumor may easily become surrounded by the rapidly forming new bone, in which case the cyst may be entirely covered, or may be with or without some trifling fibrous connection with the overlying scalp.

But of much more importance than this is the original communication between the primary alimentary canal and the central neural canal. Additional facts proving both the anterior and posterior communication of these original canals have only been recently brought to light, and are of sufficient importance to justify some description in this connection. Some fifteen years ago Owen at-

tempted, unsatisfactorily, to show that the gullet of ancestral vertebrates was continuous with the third ventricle, and that the space from the pineal to the pituitary bodies by way of the infundibulum represented this primary gullet. He had, however, been preceded by Dohrn, who thought that the fourth ventricle marked the place where the oesophagus pierces the nervous ring. It has remained, however, for Gaskell and Sutton to show that the tube which now represents the central nervous system in the invertebrates is really the disused segment of the former primary canal. These two scholars, working independently, have arrived at fundamentally the same results. They have profited by Hertwig's investigations, who has shown that the original pleuro-peritoneal cavity is a derivative of the fundamental alimentary canal, arising as two separate diverticula whose central portions persist as the permanent alimentary canal, while the lateral portions coalesce to form a common pleuro-peritoneal chamber. This fact is of no small importance, both from the embryological and the pathological standpoints, since it shows how the cells lining the peritoneum are really of the original hypoblastic origin, and that the pleuro-peritoneal cavity is represented in the invertebrates in the so-called gastrula-stage of inversion of the exterior surface.

In the very young embryo we find a fundamental U-shaped tube, from whose anterior branch is developed the alimentary canal, and from whose posterior branch, representing the notochord with its central neural canal, are formed the brain and spinal cord. This tube is lined by a continuous layer of columnar epithelium, and terminates at the cephalic end by a cul-de-sac. The anterior branch is widely open to the yolk-sac, and this becomes connected by an epiblastic involution which covers up the cephalic end of the now primary gut; while at the same time a diverticulum, the so-called pouch of Rathke, makes its way in the direction of the cephalic end of the other branch of the original tube, uniting with it, in fact, by an analogous diverticulum produced from the other side, to which I shall recur in a minute. Again, at the caudal extremity, there is another involution of the surface, where an opening is established. All that remains of the anterior branch of the primary U-shaped tube between this division and the posterior branch known as the post-anal gut is represented in the adult by Luschka's or the coccygeal gland. Occupying the flexure of the tubes is a chain of sympathetic ganglia with branches to each section. The

anterior branches ramify in the walls of the bowel and develop intrinsic ganglia and plexuses, with which the names of Auerbach and Meissner are closely associated ; while those going to the posterior disappear in its substance, join with groups of nerve-cells developed in the thickness of its walls, and form the gray matter of the spinal cord. In this way certain nerves persist and bring these two systems into close relationship ; these are known as the splanchnic. Thus it will be seen that in the dorsal section development is in the direction of nerve-cells, while in the ventral section development is rather into muscle-cells, the two being associated by the splanchnic nerves. The epithelium lining the posterior tube fails to develop ; that lining the anterior becomes highly specialized for digestive purposes. Although it may disillusionize some of us, it is, nevertheless, to be stoutly maintained that the canals of the central nervous system are really of intestinal origin, as shown by their original continuity, their similarity in fashion of development, their correspondence in point of time, their close inter-relation through the splanchnic nerves, and by the association of numerous malformations of the central canal of the cord with deformities of the alimentary canal.

What, now, is to be said of the anterior communication of these canals ? If one will take the trouble to dissect carefully the macerated sphenoid bone of a six or seven days' fœtus (or younger) he will find it to contain much fibrous tissue, in the midst of which he will detect a small canal that may be entered, sometimes even in the fœtus at birth, by a small probe introduced into a minute recess of the mucous membrane exactly in the middle line of the nasopharynx, close up to the base of the skull. This pocket, often half an inch deep, is known as the bursa pharyngea, and may often be seen in the adult. It marks the pharyngeal termination of what is known as the cranio-pharyngeal canal. It would be noticed much oftener were it not surrounded by a collar of lymphoid tissue, known as the pharyngeal tonsil, corresponding to the collections of lymphoid tissue which mark the site of other obsolete canals. The internal opening of this canal is to be found in the floor of the sella turcica. This is the remains of the diverticulum already alluded to, which has made its way from the cavity produced by the infolding of the integument at the cephalic end of the anterior branch of the original U-shaped tube.

The remains of the other diverticulum, extending anteriorly from

the upper end of the posterior branch, are to be seen in the fourth and third ventricles and their communication with the infundibulum. Here, again, the relation of the pituitary body and the so-called pineal gland to this anterior neurenteric communication is most interesting and most important. The structure of the pituitary body is so often likened to that of the thyroid, the thymus, the adrenals, etc., which are all of obscure origin, that anything shedding light in this direction is of great interest. According to this view we must, then, regard the pituitary body as the intracranial lymphoid tissue, which again marks the site of this obsolete canal. I think the investigation of Beard, Gaskell, and Sutton may now be regarded as clearly establishing this fact. Wiedersheim also regards what he calls the pineo-pituitary tract as the primitive mouth-part, archæostoma, or gullet of the ancestors of the vertebrates, the present mouth (neostoma) being an ingrowth, as indicated, between two branchial arches. If in this way the pituitary body can be shown to have, embryologically at least, a more intimate relation with the alimentary system, it may help to shed light where it is much needed—upon the obscure etiology of such a disease as acromegaly.

This brings up also the proper position of the pineal gland, so-called. Within a few years we have been taught that this is the remains of the pineal eye, or that it is to be classed as an original and perhaps rudimentary sense-organ. But later researches have failed to confirm this theory, since it has nowhere been found functional. I may quote a statement from Prof. Woods Hutchinson, nephew of Jonathan Hutchinson, who states in a letter to me :

“ I have carefully compared all the plates and representations of this organ and its section which I could procure with the result of a decided conviction that all that can be said of this body is that it was an epithelium-lined cavity at some time, communicating both with the surface and the ventricular cavity of the brain ; and it has as much the appearance of having been mouth and gullet as eye-bulb and optic nerve. I have also consulted several morphologists upon the question, and they tell me that all one can definitely say is that it is the degenerated remains of an epithelial (cerebral) outgrowth of some description.”

(See also editorial by him in *The Medical News*, June 6, 1895 : “ Is the Brain an Appendage of the Alimentary Canal ? ”.)

If this view be accepted, a large class of hitherto mysterious pro-

cesses and lesions is more susceptible of explanation than by any other theory yet devised.

Accepting, then, the pineo-pituitary-infundibular passageway as marking the site of the original anterior communication, let me again refer to the posterior communication between the neural and enteric canals, this being the lower part of the original U-shaped tube already alluded to. Here, first of all, is Luschka's gland, a mass of lymphoid tissue marking the site of the obliterated passage. The first to appreciate the true character of congenital coccygeal tumors and to associate them with this canal was Middeldorf.¹ These tumors, like all others developing from this lymphoid tissue, always assume dermoid characteristics, and are for the most part situated between the rectum and the cæcum, though when large they make their way into various parts of the pelvis. (For example, I have lately successfully removed one from a man of fifty, which had pushed its way from within entirely out of the pelvis and had raised a conspicuous and tender prominence in the gluteal region, which almost completely disabled him. After removal it weighed four pounds.) These dermoids intrude themselves in all directions within the pelvis, and curious instances are recorded, many of them in the *London Pathological Transactions*. To the same general class belong most of the congenital coccygeal tumors which figure in the monographs of Calbet² and others.

Per contra, equally well-marked dermoid tumors are met with in the original location of the infundibulum, especially in connection with the pituitary body. They have been described also as growing from the body of the sphenoid and projecting into the orbit or in other directions.³

And the same is true also of the lower end of the infundibular canal, dermoid tumors being often found in the vault of the pharynx; while adenomatous enlargement of the pharyngeal tonsil is extremely common, particularly in children.

The origin of dermoid tumors from this original lymphoid tissue in the neighborhood of obsolete canals has equal interest and importance in considering the embryology of the thyroid body, which arises as a separate diverticulum from the anterior wall of the phar-

¹ Virch. Arch., vol. ci, p. 37.

² Contribution à l'Étude des Tumeurs Congenitales de la Région Sacro-coccygienne, Paris, 1893.

³ Lawson: Path. Soc. Trans., vol. xxxv. p. 379.

ynx or floor of the mouth. In all but the lowest forms of vertebrates this diverticulum becomes completely shut off, and the duct leading to the developing thyroid is early rendered obsolete. In man it persists for a short time in the embryo, and is known as the thyro-hyoid duct, first described by His. By the time the hyoid bone has developed this duct has divided, that portion above becoming the lingual duct, that below remaining as the thyroid duct. This latter is often known as the processus pyramidalis, since it usually contains muscle-tissue, and has been described in most text-books of anatomy as the levator of the thyroid. When either of these ducts persists the fact is usually known by continuous shedding of epithelium, and perhaps discharge of sebaceous material. At times the ducts dilate into cysts of considerable size. Thus I have recently had occasion to exsect such a cyst, the size of a hen's egg, from the floor of the mouth and base of the tongue in a young woman. The thyro-lingual duct originally opened upon the tongue at the point where now we have the lymphoid tissue known as the lingual tonsil. Along this location dermoids often develop, which may be central, unilateral, or bilateral, the central dermoids appearing, for the most part, as retention-cysts in the original thyro-lingual canal. It is worth while to remind you also that in case of epithelioma developing in this neighborhood the malignant process may extend rapidly down this canal and produce a perforating ulcer of the tongue—a melancholy instance of which recently occurred in a prominent officer of the army medical corps.

The thyroid duct should also completely disappear, but may persist, either as a duct extending from the thyroid isthmus to the hyoid bone, usually surrounded by muscle-tissue, or as a canal obliterated in the main, but presenting interrupted dilated portions—*i. e.*, a series of cysts; or, lastly, it may be represented by a series of detached bodies, known ordinarily as accessory thyroids. These supernumerary thyroids are to be regarded always as the persistent remains of this original passage, and not in any other light. Both in the persistent or obliterated track, as well as in the thyroid body itself, cysts are most prone to develop, varying much in size, contents, rapidity of growth, etc. Some are multiple; some are single. The most interesting of them all are the dermoids, which are intimately related in structure to those dermoids found in connection with Luschka's gland and the post-anal gut. Fifty years

ago von Ammon dealt with these in his remarkable treatise, and they have been frequently met with since then.

Another of the obsolete canals in the body to which too little attention is generally paid is that known as the vitello-intestinal duct, which originally connected the yolk-sac outside the embryo with the developing alimentary canal. This occasionally fails to become obliterated as it should, and may then present either as a protruding vascular tumor at the umbilicus or as a form of umbilical and fecal fistula, or as a dermoid located within the abdominal parietes. (I have had occasion within a short time to operate on a young man who nearly all his life had a discharging sinus from the umbilicus, into which a probe would pass three or four inches. Upon abdominal section, I found a minute external opening connecting interiorly with a good-sized cavity lined with epithelium, and this, again, connecting with the small intestine by a trifling orifice. The extirpation of the sac and the sinus with intestinal suture was sufficient to remove completely the difficulty.)

Another form of umbilical fistula is that represented by previous urachus. This is so commonly dealt with in text-books that, beyond reminding one that the urachus may be in part obliterated, but presenting cystic dilatation in some portion, or that just at the outlet it may be connected with a dermoid growth, I will not detain you with its consideration.

The subject of branchial fistulæ is also one of great interest. This is quite thoroughly dealt with in works now before the profession, and need call for but little attention here. Their study and recognition are entirely matters of the present century, for the most part of the latter portion. Heusinger made a most marked advance when, in 1864, he analyzed forty-six examples of the malformation (*Virch. Arch.*, vol. xxix.). These branchial fistulæ are the persistent remains of the original branchial or gullet clefts, and at present persist only among the fishes. They should all be closed long before birth, save only the first, which forms the tympanic or Eustachian canal. When the second remains open, in whole or in part, it opens usually between the angle of the jaw and the sterno-mastoid muscle. When the third fails to close, the opening is situated opposite the thyro-hyoid space, close to the sterno-mastoid. The fourth, when open, presents just above the sterno-clavicular junction. This is the more commonly persistent of the three. Internally or within the pharynx these clefts present in the following

locations: The second in Rosenmuller's recess, between it and the tonsil; the third and fourth into the blind canal, called by His the precervical sinus, these being intimately related with the development of the thymus body. Thus the thymus is tissue intimately related to the lymphoid which marks all obsolete passages, the tonsils themselves bearing a very close relation to the second cleft.

These branchial clefts present either as complete fistulæ, external cul-de-sac, internal ditto, or cystic dilatation of intermediate portions, both orifices being closed. It is now well established that certain pharyngeal diverticula are due to internal blind openings of these clefts. Watson (*Journ. of Anat. and Phys.*, vol. ix. p. 134) has described the most remarkable case on record of this general character. Sutton, moreover, has already made statement that certain of the so-called sebaceous cysts occasionally met with beneath the deep cervical fascia are in reality dermoids arising in persistent branchial remains, and consequently, analogous to dermoids of the tongue originating in the lingual canal. Harrison Allen has recently thrown much light upon the little masses of glandular or adenoid tissue situated in the fauces, by showing that they are the relics of the second branchial clefts, the pharyngeal tonsil, of course, marking the lower margin of the infundibulum. It might be well just here to digress for an instant to remark that lymphoid tissue thus located, no matter where, about the body, is always peculiarly prone to infection like other degenerated tissues, and that when infected it succumbs most easily to disease. This is conspicuous about the appendix, for instance, where it so frequently leads to disaster. It is commonly seen, however, about the tonsils and other tissues scattered about the pharynx.

I should add further in this connection that the congenital fistulæ occasionally met with in the middle line of the neck are not to be confounded with branchial fistulæ, but are to be referred to persistent remains of the thyro-lingual or thyro-hyoid ducts.

There is always a tendency when we start at the top of that which has been growing to credit the growth with the tendency to rise. To judge fairly, however, one should start at the bottom, and begin by ascertaining how many other members of the group studied have taken other directions and partly or completely failed. The higher the place of an organism in the vegetable or animal scale, the more restricted are the limits within which it is able to vary or to progress. As Coste has observed, few things are more instructive than the

phenomena of blind alleys in evolution—that is, the evolution of certain growths along lines which stop abruptly, as if capacity for further development were wanting. Coste has followed out this line of reasoning in the vegetable kingdom in a very interesting way, but one which takes us too far from our present subject. (*New Science Review*, "Evolution and Teleology," July, 1895, p. 65.)

It often happens that the foliage proceeding from adventitious buds is very different from that of the rest of the plant. This is in accord with the theory of reversion, and these analogies are most common in the lower orders. Bud-formation is chiefly determined by nutritional conditions, and implies always relative excess. That is, the forces resulting in growth are in excess of the forces antagonistic to it.

Even the dreaded tumors may be viewed from the same standpoint as a reversionary process. When animals are hard pressed for existence they appear to become more prolific. This is notably true in the human race, which seems to have the highest degree of fertility where the struggle for existence is the most arduous. In the case of the infectious granulomata, for instance, cells multiply in soil already impoverished, but show inherited weakness by their incapacity for prolonged existence. In the presence of a specific virus of any kind these tissue-cells show a disposition "to be fruitful and multiply," as Hutchinson says, "no matter what comes of it."

Thus reversion to earlier type in the avian and reptilian stage is remarkably shown in our liver-cells, where the tendency so often is to the elimination of nitrogenous materials in the form of uric acid rather than of urea. The wide bearing of this revisionary tendency upon the very common malady known comprehensively as Bright's disease is apparent if we remember that the primary arterial lesions are, in all probability, due to the circulation in the blood of an uric-acid irritant, giving rise to the so-called arterio-capillary fibrosis. It is well known that among bipeds uric acid is eliminated by liver-cells without having undergone metamorphosis into urea, the urine of birds being solid instead of containing excretory material in watery solution. In fact, as Garrod says, "Our gouty patients are a sort of birds."

Certain nervous diseases possess characteristics justifying our regarding them as reversions to certain forms of activity normal in

more or less remote ancestors. In the case of goitre, this has been practically established. It is curious, by the way, to note that goitre affects the lower animals almost always in those parts of the world where it is common in man. Horses are most liable; then dogs, calves, and lambs. Cows and sheep are not so liable. Cystic goitre in various small animals, like squirrels, has also been reported.

But perhaps nowhere does reversion or atavism manifest itself more conspicuously or unmistakably than in the mutual convertibility of skin and mucous membrane. The former, being subjected to more modifying influences, of course undergoes more frequent changes. Thus, it furnishes in various animals hair, feathers, bristles, quills, horns, scales, etc.; and in the lower animals it furnishes glands which secrete mucus, milk, poisonous fluids, or fluids loaded with calcium salts, by whose depositione shells or even pearls are formed. Moreover, these characteristics are maintained in dermoid cysts found in these same animals. Thus in sheep they contain wool; in cats, hair; in pigs, bristles; and in birds, feathers. It is well known, moreover, that gray hairs are occasionally met with among the very young. So, also, in young subjects dermoids occasionally, but rarely, contain gray hair.

The mucous membrane has been called "the internal skin." In some respects this is more than a mere happy expression, because from this membrane may be developed many of those structures which we find in or upon the skin. Its most distinctive feature is its epithelial covering, which is ordinarily hypoblastic, but which blends in the buccal cavity, for example, with the infolding of epiblastic epithelium, whose papillæ calcify and form teeth, and from which in many animals there develop hairy patches upon the inside of the cheek. Moreover, sebaceous glands are not confined to the skin, but are large and frequent; *e. g.*, in the mucous membrane of the nymphæ. *Per contra*, mucous glands occur in the skin of reptiles, worms, and fishes. Among the shell-fish the external glands secrete or produce the shell, while in reptiles and birds it is the glands in the oviduct which take on this shell-forming function, producing it rather for the egg than for the parent individual. We also know that calcareous formations are common in the human prostate as well as elsewhere. But it is not alone in those places where the epiblast and the hypoblast meet that such epidermal products are found. If skin and mucosa be really in-

controvertible, why should we not look for hair in the alimentary canal? And if we do, we are not disappointed, because at least in certain birds there is a curious pyloric plug—filter, as it were—composed of hair. Garrod has shed much light upon the frequency of hairs growing from the mucous membrane. (*Collected Works*, p. 334.)

It is often seen that those structures ordinarily regarded as dermal are not at all necessarily so. Thus, the thick part lining the bird's gizzard is composed of epidermal cells, while pigment occurs in the mouths of many animals and in the vaginæ of many others. Calcareous deposits occur in the human prostate, in the oviducts of birds, reptiles, and monotremes, and upon the outside of many of the invertebrates. Hair is seen in the stomachs of certain birds, upon the eyes and in the mouths of many animals; mucous glands inside the alimentary canal of man, upon the skin of reptiles, fishes, and worms; sebaceous glands ordinarily upon the dermal covering, but as well in the nymphæ of the human female. In the South are met certain blue-gum negroes,¹ so-called because of the excessive deposition of pigment about the gum and palate. Here, too, we have a reversionary or atavistic manifestation.

Thus, again, it will be seen that there is no one characteristic by which we can make a primary distinction between the skin and mucous membrane. Moreover, the old statement that the former is epiblastic and the latter hypoblastic will scarcely suffice, for certainly the conjunctival sac is a typical mucous surface, yet equally certain is it derived from the epiblast, of which it occasionally shows some more active relic. The atavistic tendency is shown even further in the conversion that can be actually seen upon the surface of a long-extruded hemorrhoid, where the columnar epithelium of the hypoblast becomes metamorphosed into the scaly epithelium of the epiblast.

From all of which follows the corollary which Sutton has been quick to formulate, that a cyst lined with mucous membrane should be as readily admitted into the category of dermoids as one lined with skin, providing that either arise in situations where skin and mucous membrane do not ordinarily occur.

Let me next call your attention to the significance of polymastia,

¹ There is at least a superstition—how well founded I cannot say—that the bite of a "blue-gum nigger" is peculiarly infectious. This I learn from gentlemen who have practised in the South.

the so-called supernumerary and para-mammary breasts, and to the allied topic of gynecomastia. Aristotle refers to the yield of milk from male goats, and Blumenbach described a case in which the animal had to be milked every other day for a year. Isidore St. Hilaire kept for many years in the Jardin des Plantes a large uddered he-goat that freely gave milk. It is well known also that among the Pomeranians, and certain other people as well, the male breast yields milk very often.

Laycock, some years ago, made a suggestion that mammary-gland tissue may make its appearance upon almost any part of the human body. It is known to occur also in ovarian dermoids, while the occurrence of supernumerary breasts in such situations as the perineum would corroborate this statement, as well as the view that the mamme are essentially nothing but specialized sebaceous glands that may be met, in normal or aberrant condition, in any portion of the skin. It is well known also that nipple-like processes are attached to the skin in many places, and that mammary tissue is found in locations unprovided with ducts. It is likely that this specialized tendency of sebaceous gland-tissue will account for the crops of furuncles which appear occasionally in the axillæ, especially in women, and most commonly about the menstrual period. This is certainly a manifestation of atavism, the atavistic side of it being shown by the abnormal presence of this tissue, while the furunculosis is, of course, to be explained entirely by accidental infection.

In animals, axillary mamme are most exceptional, but they are met with in the fruit-bats and in the flying lemur. Schultze finds that in multimastic animals the first mammary rudiment presents as a linear thickening of the epidermis, along a line nearer the dorsal than the ventral surface, in which at various spots lenticular thickenings occur, between which the connecting strands disappear, and from which the individual glands are later developed. The domestic cow has normally four well-developed and often two rudimentary teats. The latter may be occasionally so well developed as to yield milk. Other anomalies met with in the cow are disproportion in size of those normally present, or the placing of one or several supernumerary teats always behind the normal ones. In sheep the supernumerary teats are always placed in front of the normal ones. It occurs occasionally in the human species that a supernumerary nipple is placed in or near the middle line, either upon the thorax or the abdomen. This must be regarded as a dis-

inct reversion to the marsupial type, since in the marsupial pouch three nipples are scattered along this line. Williams has done a great service by calling attention especially to the trefoil arrangement of the mammary gland in the human female, and to the important clinical fact that this arrangement is often overlooked by operators who fail to dissect out during operations for cancer the ultimate portions of this trefoil arrangement, in which later recurrence may consequently more easily occur. The trefoil arrangement is practically a tendency to return to the polymastia of earlier days, and may be regarded as an atavistic polymastia.

But passing from this interesting topic to a few practical illustrations of the bearing of evolution upon pathology, I must remind you that we often lose sight of the fact that there are changes in the human organism not so very much less striking than those which convert the tadpole into the frog. Aside from those to which I have already called your attention, we see instances in the teeth, the thymus, the breast, the uterus, the skeleton, etc., most of which indicate the possibilities of tissues remaining unchanged for long periods, and then taking on new phases of growth by reversion to a state of embryonic activity. While in the ordinary course of organic evolution cells develop in regular and orderly manner in accordance with inherited tendencies, occasionally they arise at places where they have no business, or at inappropriate times, and then grow to an extent at variance with normal formation. In this way are produced embryonic monsters and malformations as well as various neoplasms.

Wisdom-teeth are to be regarded as reversions to a form of ancestors having a jaw long enough to contain more teeth, at least five or six molars. The extra incisors which appear at the edges of the pre-maxillary bone in extreme cases of harelip are also atavistic in character.

The well-known characteristic of so-called Pott's fracture of the fibula has been shown to be largely due to the fact that this bone is a rapidly disappearing relic, which, in fact, in many of the lower animals has already completely disappeared. In the human embryo at the third month the two bones of the leg are equal in size.

Of all the forms of club-foot, that known as equino-varus is the most common. It is the normal position of the foot in the embryo up to the seventh month, and in many of the quadrumana throughout their lives.

The acneal pustules which appear upon the face of adolescents at the period of puberty are, in effect, only atrophied hair-follicles or sebaceous glands endeavoring to produce the hirsute covering of our former ancestry.

It is of interest, also, to know that eczema is by no means confined to the human skin, but that it is one of the common heritages of nearly all living surface-tissues. Woods Hutchinson has shown that its oldest analogue is the exudation of gummy and resinous fluids upon the stems or leaves of plants and trees for the healing of wounds and protection against fungi and entanglement of insect enemies. Quite analogous also is the outpour of protoplasm from the surface of an amœba, by which it encloses or attaches foreign bodies coming in contact with it. Among certain plants we find a disease which may be regarded as vegetable eczema, particularly in the so-called "apple-scab," which is caused by a distinct fungus (*fusicladium dendriticon*). In the course of this vegetable disease a distinct papular stage is seen, to be followed by an equally distinct horny stage, in which a layer of cork-like tissue is formed. Among tubers a similar disease known as the "potato-scab" is quite common. Among domestic animals mange in dogs, grease in horses, and foot-and-mouth disease in cattle are almost identical with eczema in the human subject, the irritant, however, being a parasite.

Moreover, as Hutchinson has shown, the preference which eczema seems to manifest for flexor surfaces, and especially flexures, is to be explained upon the principle that it is a dermatitis, and naturally occurs where skin is thinner and more delicate, while the irritating effect of perspiration, dust, heat, friction, etc., is more marked in these localities.

But all these facts to which I have called your attention to-night are more or less isolated instances from which great and important truths are yet to be deduced by those who have knowledge comprehensive enough to utilize them. Unfortunately, these men are as yet rare; and one remedy for this condition of affairs which I place before you as deserving of most careful consideration is the formation of a society in which should meet on common ground botanists, agriculturists, vegetable pathologists, biologists, zoölogists, veterinarians, and human pathologists, where all may exchange ideas, and where each may gain by contact with the others that which will add vastly to his own information and usefulness.

Take the case even of the veterinarians, who practice earnestly and zealously and more and more intelligently in a field which, as one might say, is topographically next to ours. How much they know which might be of value to us, and how much we know which they could apply to the greatest possible advantage in their own work, did they but share the knowledge. It seems to me that the formation of some such society for the interchange of knowledge would be of the greatest imaginable help in the direction indicated.

The other essential, as it seems to me, is a carefully prepared work upon comparative pathology, in which should be recorded, collated, and carefully edited the various facts known to the classes of students just enumerated. Such a work must necessarily be of composite character, since probably no man living knows enough in all these various branches to justify his attempting it as an individual task. Even the selection of an editor for such a work would be a difficult task, and would be a high compliment to the man chosen. In the preparation of a book should be enlisted men like Hertig, who writes most entertainingly of the diseases of trees, and men of his stamp, who concern themselves mainly with the vegetable world. Others, again, like Metschnikoff, who have had a training as zoölogists, but who have the deeper insight which permits of the application of their knowledge to the explanation of the problems of human pathology, should also be enlisted in this great cause. The ablest veterinarians of the world, and those who concern themselves with such problems, for instance, as are presented in this country to the Bureau of Animal Industry, should also contribute; and, finally, their labors and results should be carefully collated and arranged alongside of the facts presented in our ordinary works on general pathology, and this last by an ideal editor, who should combine vast stores of general information with the knowledge of that which would enable this storehouse of facts to be made available and applicable in the recognition and treatment of diseases in the human race. Thus, even the agricultural chemist, the botanist, and the naturalist might combine to produce a work whose value should so far exceed that of any single work now before our profession as do our present books those published a hundred years ago upon the same subject.

This, then, is my plea to you in closing: that men in various branches of scientific work should get together and make common stock of their knowledge, and that the results of their investigations

be presented to the scientific world in some such way as that indicated. There exist to-day no works in any language on comparative pathology. The ideal work to which my longing points would require two, three, or even more volumes,¹ and should be epitomized in condensed form, which could be placed in the hands of every second-year student, and upon which he should be fed, as it were, from the beginning of his second year until after his graduation, when the larger one should be in his hands until he has familiarized himself with its contents. When this happy condition of affairs is brought about we shall have men in our profession who are liberally educated, shining in the light of a knowledge which, after all, would be focussed upon the problems of disease in man; and, then, and I fear not until then, can medicine claim the title and privilege of being really liberal.

There are great truths that pitch their shining tents
Outside our walls, and though but dimly seen
In the gray dawn, they will be manifest
When the light widens into perfect day.

LONGFELLOW (*Michael Angelo*).

¹ A new work of promising character in this direction is announced by Lubarsch and Oster-tag (*Allg. Path. und Path. Anat. des Menschen und der Thiere*).

ADDRESSES.

I. THE MEDICAL EDUCATION OF THE FUTURE.

BY CHARLES W. ELIOT, LL.D.,
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I SHALL make no apology for asking your attention to some considerations which tend to show that the education of the physician should hereafter be much more thorough and extensive than it has been, or is, and particularly that preliminary training should begin earlier and be made more substantial. Inasmuch as the help of many educated persons who are not physicians is indispensable to the accomplishment of the needed educational reforms, I shall ask leave to keep in mind on this occasion, not only this professional audience, but also the non-professional multitude whose sympathy and aid we shall need. You will kindly see in this purpose the explanation of the fact that I shall mention in the course of this address many things already familiar to medical men.

The improvements in medical education have been very great during the lifetime of the older men in this assembly ; and perhaps some of my auditors may think that the changes already wrought justify satisfaction with present achievements, and a contented repose on laurels won. I wish to draw another moral from the improvements of the last twenty-five years—the moral, namely, that we should be encouraged by the great improvements already attained, to work hopefully for improvements still needed. As an encouragement to further exertions, let me briefly contrast the conditions of medical education to-day with those of thirty years ago, mentioning only the rough typical facts without entering into local details. Thirty years ago there were no requirements for admission to our medical schools. To secure admission a young man had nothing to do but register his name and pay a fee. In consequence a large proportion of medical students were persons who,

in youth, had received a very scanty preliminary training. Hundreds of young men joined the medical schools of the United States who could barely read and write, and whose powers of observation and reasoning had scarcely been exercised at all, except in their sports or in the labors which had given them a livelihood. The total period of required school attendance for the degree of M.D. did not exceed in the best schools three winter terms of four months each, and there were schools accounted respectable which had even a shorter total period than this. The main means of instruction were lectures, surgical exhibitions in large rooms appropriately called theatres, rude dissecting-rooms with scanty supervision, and clinical visits in large groups. The lectures were repeated year after year with little change, and no graded course was laid down for the student to follow during the three consecutive winters. At graduation, the examination was ordinarily entirely oral and very brief, and at Harvard, at least, every man got his degree who passed in a majority of nine subjects, every one of the nine being really indispensable. Under this system young men might receive the degree of Doctor of Medicine who had had no academic training whatever, and who were ignorant of four out of nine fundamental medical subjects at the time they received their degree. A majority of young medical practitioners were therefore uncultivated men, with scanty knowledge of medicine and surgery, who had had opportunity for but a small amount of observation by the bedside, and but little practical experience in hospitals. It speaks volumes for the educating force of medical practice that out of such raw material there could be produced in the course of years so fair a proportion of skilful, humane, and successful practitioners. We have here a demonstration that medical study, contrary to a too common opinion, is to a man of ordinary intelligence and conscientiousness refining, developing, and uplifting. These excellent influences, however, it is the province of a well-conceived, systematic education to provide in youth before practice begins.

The cost of a medical education at the period of which I speak may be fairly represented by about \$350, paid to a medical school, to which sum should be added the student's board and lodging for about a year. During the other two years of the three which were supposed to be devoted to training in medicine, the student was ordinarily able to do something for his own support, or at least he was favorably situated as regards the cost of board and lodging.

The present conditions are very different. At the Harvard Medical School the cost of a degree in money is now about \$835, besides laboratory charges; and the student must give four whole years to the school, except that during the three months of summer he may enjoy a vacation, or earn something toward his support—unless, indeed, he choose to take some of the many summer courses which are offered him. Accordingly, he has his board and lodging to provide for during thirty-six months of term-time instead of twelve. He is required to pass an examination at admission, which though not comparable to the examination for admission to Harvard College, nevertheless proves that he has had some training in a secondary school. The Harvard medical student must, therefore, have had some educational profit out of his early years, although the standard in this regard is still altogether too low. No student can graduate until he has passed a satisfactory examination in every one of the prescribed subjects taught in the school and in a small selection of elective subjects. The subjects of instruction are arranged in a carefully graded course which carries the student forward in an orderly and logical way from year to year through all four years. Moreover, the methods of teaching have undergone fundamental alteration. Thirty years ago there were only two laboratories in the Harvard Medical School—a dissecting-room, in which the manners and customs were as rough and unwholesome as the room and its accessories, and a little chemical laboratory in which no one was required to work. A small minority of the students voluntarily sought some laboratory training in chemistry. In our present medical school, laboratory work of many sorts demands a large part of the student's attention. There are laboratories in anatomy, medical chemistry, physiology, histology, embryology, pathology, and bacteriology, and in all these some work is prescribed, and additional work is done by many. In clinical teaching, moreover, the change is great. Formerly, a large group of students accompanied a visiting physician on his rounds at the hospital, and saw what they could under very disadvantageous conditions. Now, instruction has become in many clinical departments absolutely individual, the instructor dealing with one student at a time, and personally showing him how to see, hear, and touch for himself in all sorts of difficult observation and manipulation. Much instruction is given to small groups of students—three or four at a time—no more than can actually see and touch for them-

selves. A four-years' course of training, such as I have described, has a high degree of training power both for the senses and the reason. The old medical teaching was largely exposition ; it gave information at long range about things and processes which were not within reach or sight at the moment ; the new medical education aims at imparting manual and ocular skill, and cultivating the mental powers of close attention through prolonged investigations at close quarters with the facts, and of just reasoning on the evidence. These beneficent changes have been brought about within the lifetime of the youngest men here present, without shock to the community, or any serious loss to the medical schools or to any other class of educational institutions. Indeed, the medical schools have profited in all respects by the changes I have described, and the schools which have been most progressive have in the long run made the largest proportional gains, allowance being made for differences in their natural sources of student supply. If, therefore, in the course of this paper I seem to you to be asking much of the coming generation, I may appeal confidently to the recent past as justifying high expectations for the future.

I proceed to describe and illustrate some of the new demands made on the student of medicine and the practitioner, in consequence of the many advances made since the Civil War in medical science and art. Before the war the microscope, stethoscope, ophthalmoscope, and laryngoscope were already in use, and had given new accuracy and certainty to the diagnosis of some diseases ; but within the thirty years just past the means of medical diagnosis have been multiplied and extended in many different directions, and some of these new means depend on sciences which hardly entered at all into the education of a physician two generations ago, and on manual and ocular skill, which only a small part of the present profession possesses. To thoroughly understand and effectively use these new means imply extensive acquisitions of knowledge and much practice in delicate and accurate manipulations and refined observations. To make plain to the comprehension of non-professional as well as professional persons the gravity of these new demands on the thoroughgoing student of medicine, I may mention as briefly as possible some of the comparatively new instrumentalities of diagnosis : 1. The recording thermometer, which has not yet been thirty years in common use, gives in many dis-

eases definite warning of danger with a certainty which collateral symptoms do not possess. The diurnal variation of temperature in typhoid fever has furnished an almost certain method of diagnosis for that disease. Many of my hearers can remember when this invaluable instrument first came into general bedside use. 2. The examination of urine has taken on new forms, and has greatly improved in rapidity and certainty—not only sugar, albumen, and casts are detected with certainty and with estimates of quantities, but the presence of biliary matter in the urine is observed, and of materials of the blood, when destructive changes of internal organs are going on. Chemistry and microscopy conspire to make these determinations accurate and sure. 3. The microscopic examination of the blood is a new means of diagnosis of the utmost value. We may already say with confidence—no blood parasite, no malaria; and it is quite within reasonable hope that the microscopic study of the blood corpuscles may lead not only to a sure diagnosis, but to an improved treatment of these mysterious and widespread diseases to which the vague term “malarial” has so long been loosely applied. The increase of white corpuscles in the blood also affords valuable diagnostic indications. 4. The microscopic discrimination between malignant and non-malignant tumors is another important gain in microscopic diagnosis. It is but recently that the microscopist has stood beside the operating surgeon to tell him whether a tissue close to the path of the knife is normal or abnormal, safe or unsafe to leave behind. It is but lately that the microscope has demonstrated that a large proportion of cutaneous diseases are absolutely characterized by parasitic growths, so that the particular parasitic growth present may be relied on for diagnosis. It is only within recent years that a bacteriological laboratory, and accommodations for animals kept for inoculation uses, have been considered useful adjuncts of wards for cutaneous diseases. 5. It is, however, to bacteriology that we owe the greatest improvements in medical diagnosis—a science and art so recent that most of my auditors received their medical education before this subject entered at all into the curricula of medical schools. The extraordinary contributions of this science to medical art I can barely mention. It has already supplied a sure means of determining the presence of diphtheria and an extraordinarily successful mode of treating that terrible disease. It has made sure the diagnosis of cholera, and holds out a good hope of arriving at a successful treatment of that pestilence.

It has isolated the bacillus of tetanus—a disease which has long been the reproach of medical science—and has pointed out the hopeful method of treatment. It has discovered the bacillus of tuberculosis, provided a sure test for tuberculosis in domestic animals which are in contact with man, and taught us much about the manner in which the disease may be communicated, although it has not yet achieved a successful method of treating the disease in man. The discoveries already made indicate general methods of research which should lead in no long time to great improvements in ordinary vaccination and in the diagnosis and treatment of scarlet fever, erysipelas, and typhoid fever. It has also very much improved our means of discriminating between noxious and innocuous water-supplies and milk-supplies. The contributions of bacteriology to the medical art are all the more remarkable, because its methods and processes are still enveloped in much mystery—mystery which teaches us to expect much from the further developments of the new science as it gradually disperses the fogs which now envelope it. It should be mentioned in passing that bacteriology itself owes its existence to admirable recent inventions which are not at all biological—namely, the improved immersion-lens and the ingenious methods of staining. These inventions made bacteriology possible.

What extensive fields of knowledge are familiarly utilized in these new methods of diagnosis!—physics, medical chemistry, normal and pathological histology, and bacteriology, and in addition the various skills required in exact chemical, physical, and microscopic observation and manipulation! Every physician and surgeon ought to have been trained in youth—in good part before his strictly medical education began—in these subsidiary sciences and arts, and made capable of performing himself the operations involved in these new methods of diagnosis, of understanding the present state of these methods, and also of apprehending and mastering the fresh discoveries which every decade will surely bring. The physician or surgeon who does not know how to utilize these great discoveries will, at the best, become a dependent on somebody who does.

After diagnosis there comes in many cases a painstaking search for the causes or sources of the disease—a search to be made by the physician, sometimes for the patient's sake, but oftener for the benefit of his family or the community. This search has become

during the last thirty years much more feasible. Pathological exploration has taught us the approximate causes of several important diseases, and therefore has taught us where to seek their sources ; although, indeed, the pure cultures of bacteriology do not occur in any such simple and isolated forms in the actual environment of man. We have learnt much about the transmission of disease through drinking-water, ice, and milk. We understand better than ever before the intimate connection between some diseases of animals and diseases in man. We are put on our guard against the long-lived scales or flakes of scarlet fever, the sputa of tuberculosis, the stools in typhoid, and other excreta of diseased persons. Nevertheless, few physicians seem to be capable of tracing to its source an epidemic of typhoid fever, for example, or an outbreak of scarlet fever, or diphtheria. I have been told, both in this country and in England, that this faculty is rare among physicians, so that health authorities are obliged to train specialists for such service. It seems as if every physician ought to be a guardian of the community in this respect, capable of rendering the promptest and most effective service at a moment's warning. Yet to be equipped for such service means thorough acquaintance with the most recent developments of preventive medicine, and with the newest methods of research which chemistry, physics, and biology have at command. Such duties are sometimes spoken of as extra-professional ; but that term, so applied, seems to restrict the medical practitioner to the mitigation or cure of disease, without recognizing his more important function in the prevention of disease.

The next duty of the physician is to give such careful attention to his patient's surroundings as to compass the removal of all hindrances to nature in its restorative processes. We have a much better conception than our predecessors of the nature of these hindrances, and, it may be added, of the nature of favorable surroundings. We know that a sick person is helped by every external condition favorable to health, and hindered by every adverse condition. The sick need, even more than the well, pure air, suitable food, and an exquisite cleanliness ; yet how much knowledge, observation, and decision are necessary to the maintaining of sanitary conditions in any patient's dwelling, and particularly in luxurious dwellings filled with dust-holding moldings, hangings, upholstered furniture, thick carpets, and elaborate knick-knacks, or, at

the other end of the social scale, in the dirty and crowded dwellings of the poor, too often built on land which is cheap because ill-drained and unwholesome. Trust in drugs has greatly diminished during the past thirty years, while reliance on favorable surroundings has greatly increased. To secure favorable conditions is infinitely more difficult than to drug, and requires not only larger knowledge, but keener perception, together with a high degree of persuasive influence and authoritative persistence. The physician who desires to give his patient every possible chance of successfully resisting his malady must take thought for the ventilation of his room and his bed, for the sources of the water he drinks, and of the milk he takes, and for the disinfection of whatever comes in contact with the patient or is excreted by him ; he must direct the admission of light and air, and determine the temperatures to which the patient shall be exposed. On all these points superstitions and thoroughly irrational practices have prevailed for generations, and the physician must often be at once the defender of his patient against artificial adverse surroundings, and the persuasive instructor of his kindred and nurses. The physician's care must not only compass isolation when isolation is needed, but adequate disinfection ; and if the issue be unfavorable, the proper treatment of the body which has succumbed to contagious disease. It is the constant function of the physician to teach just conceptions of contagion and of the duties incumbent on the victim of contagious disease and on those who take care of him. It is a natural consequence of this view of the importance of the patient's surroundings that nursing receives so much more attention in recent years than it formerly did. The Cambridge Hospital motto, "Man tends ; God mends," expresses concisely the modern conception of the importance of surroundings.

The past thirty years have not been as fruitful in new methods of treatment as in new methods of diagnosis and of care of surroundings. They have been chiefly remarkable for great modifications of medical and surgical practices in conformity with the general doctrine of asepsis. It is this doctrine, applied every year with greater and greater success, which has given surgery such prodigious extension during the period under consideration, and enabled it to invade successfully the province of medicine. It is fundamentally a doctrine of thorough cleanliness, but surgical cleanliness is an extreme application of the doctrine. In daily life we cannot

all be constantly washing our hands in permanganate and then in oxalic acid ; but we can all appreciate the hygienic value of cleanliness in our persons, dwellings, vehicles, offices, shops, and factories ; and we can all see now the scientific grounds of some practices which have been authoritatively commended to mankind for thousands of years, such as the washing of the hands before eating. After the feats of abdominal surgery the most extraordinary triumph of asepsis has been in obstetrics, the perils of childbirth having been apparently reduced within the past fifteen years to a small fraction of their former magnitude. We hardly yet realize what an immense benefit to the human race is this single result of the combination of discoveries and inventions which together make asepsis practicable. That the mortality of a lying-in hospital should have been reduced from 33 per cent. to one-third of 1 per cent. gives but a faint picture of the beneficent results of these discoveries. It is clear, however, that the physician who thoroughly understands and practices asepsis in obstetrical cases has not only more knowledge than his predecessor of fifty years ago, who denied that puerperal fever was contagious, but also much more skill. He must be an adept in practices and manipulations which it never entered into the head of an obstetrician of the year 1860 to conceive of.

It is one effect of aseptic surgery that the treatment of not a few diseases has become much more expensive than it used to be ; hence, an inevitable increase in the expenditure of private persons for medical and surgical help, and a significant increase in the average weekly cost of hospital patients. A pain in the bowels, which formerly would have been economically treated by a physician, is now often treated by a surgeon, with a costly operation and several weeks' attendance by expensive nurses. A large saving of human life has, to be sure, resulted, but at inevitable cost for highly skilled labor. It is no inconsiderable attainment for a physician in ordinary practice to have learned when to call in a surgeon or other specialist ; and this particular mode of practising keen observation and sound judgment is comparatively new. We have by no means reached as yet the limit of this substitution of surgical for medical treatment. We may expect to see the knife penetrate safely and effectively many portions of the human frame which the ordinary surgeon is still afraid to touch—such, for instance, as the lungs, and even the heart. It is not yet twenty-five years since I heard

the most eminent surgeon of his day in Boston say, in language too strong to repeat, that in his opinion to attempt ovariectomy was utterly unjustifiable. On every hand we see that the new methods in medicine and surgery demand not only more knowledge and skill in the practitioner, but more insight and sagacity, faculties to whose development nature and elaborate training must both contribute.

I have already said that the dependence on drugs has much diminished ; but during the period which we are considering, the number and variety of therapeutic agents have greatly increased, and there has been active experimentation on the virtues of these multifarious substances. The physician of to-day is solicited by numerous novel specifics, made attractive in form and flavor, and enthusiastically recommended by simple-minded persons who have tried them in their own bodies, and not infrequently by some physicians who share the common American fondness for a new thing. The multiplicity of these therapeutic novelties makes a new call on the physician for discriminating judgment and rational insistence on a real demonstration of the usefulness of the new agent. Where the physician of thirty years ago had need of this discriminating judgment once, the physician of to-day has need of it a hundred times.

The progress of preventive medicine has imposed on physicians a new class of duties for the discharge of which a high degree of disciplined intelligence is required. They are the only persons in the community who can thoroughly understand and explain the established principles and well-proved practices of preventive medicine; and they are, therefore, the most effective teachers of these principles and practices. The family physician should be responsible for the care of health even more than for the treatment of disease. It should be his function to give advice about the ways and means of healthy family life—about diet, sleep, fresh air, exercise, and habits of quietness and serene cheerfulness. Physicians must instruct the community in the new methods by which good public water-supplies are provided, tested, and preserved ; and they must be equally familiar with the right methods of disposing of sewage, for the disposal of sewage is really a problem of pure water-supply. They must understand the restoration of polluted waters to a safe condition, through filtration, aëration, and dilution. Their judgment should be the final one in families concerning the

safety of any given water-supply, and that judgment should be well founded on a general acquaintance with the subject and on all relevant local information. Physicians should also understand the general principles and most approved practices in ventilation ; for ventilation is not only a means of promoting health, but also a means of defense, through dilution, against contagion and other noxious influences. Now, ventilation in both public and private buildings is in itself a very difficult subject, and one but recently developed in a practical way. As the mechanical construction of our buildings improves, they become tighter, and as heating contrivances become more economical as regards the proportion of utilized heat to wasted heat, they become less valuable as means of ventilation. The roaring fire in the wide chimney of our grandfathers, made a great draught; the quiet but effectual coal-stove is an inferior means of ventilation. The more indoor the life of the population, the more important ventilation becomes to the public health. Who but the physician and surgeon can teach disinfection and cleanliness in the treatment of contagious diseases, or impress the population with the need of separating healthy children or adults from those afflicted with tuberculosis or other chronic contagion? Who else is to object to damp cellars filled with organic rubbish, to bad cooking and ill-chosen diet, and to all the manifold interior decorations with which houses are made more unsanitary? Who else can instruct the community in school hygiene, in the imperative need of thorough cleanliness throughout school buildings, of effective ventilation, of good privies, clean books, strong light, and furniture adapted to the sizes of the pupils? Who else is to teach inexperienced mothers that nothing but the most painstaking cleanliness can prevent the nursing-bottle from becoming a regular culture-apparatus for micro-organisms?

There is an infinite amount of teaching to be done in regard to all these subjects, and the medical profession are in many communities the only available teachers. In order to teach effectively, the profession needs to be better trained than it now is in the ordinary methods of influence—trained, that is, to a better power of persuasive writing and speaking, and to the habitual exercise of that authority which should accompany recognized knowledge and disinterestedness.

The public does not use its imagination sufficiently with regard to the future of preventive medicine. Leprosy and smallpox have

been measurably conquered; it has proved possible to exclude cholera and yellow fever; and yet the public is not impatient for the conquest of every other infectious and contagious disease, and often not willing to provide the necessary means of deliverance from these evils. Some of the most intelligent communities refuse to establish public disinfecting stations. Bacteriological laboratories are few and far between, when they should be everywhere accessible. Pure water-supplies have diminished typhoid fever in urban populations, but the rural populations, through ignorance, still suffer disproportionately from this preventable scourge. The faith and hope of the medical profession should arouse the public from this lethargy, and redeem it from this destructive ignorance and incredulity; but that faith and hope need to be expressed with power.

By the laws of Massachusetts and many other States, an important duty is placed upon physicians in that they may be called on at any time to testify to the existence of mental disease in persons whom it is proposed to commit to asylums. The first Massachusetts law which recognized that insanity was a disease, the diagnosis of which required medical knowledge, was passed only about fifty years ago, namely in 1844; and the existing laws concerning the recognition of insanity and the treatment of insane persons are of much later date. Insanity being an increasing evil, physicians have greater and greater need to understand its complex and elusive symptoms, that they may bear with honor the responsibilities the law imposes on them. In regard to all the defective classes—lunatics, criminals, drunkards, idiots, prostitutes, and paupers—society must be guided to wise palliative and remedial measures by highly educated, sympathetic, and public-spirited physicians. Experience shows that religious or philanthropic enthusiasm cannot deal effectively with these hideous social evils, unless controlled and guided by the physician's knowledge of their causes and sources, and of the preventives and remedies for them. The medical profession is here invading what has been the province of the church, and will need for the work, not only the medical knowledge and skill which the church has never possessed, but the personal consecration and devotion which the church has often commanded.

Thoroughly educated physicians are needed for public sanitary duties. The local boards of health should be able to secure the services of the best local practitioners, and such services should be

paid for by the public; for it is unreasonable that the profession which makes its living by tending the sick should be expected to labor gratuitously to prevent sickness. In serving on boards of health physicians would be brought into intimate and influential relations with the other members of these boards—lawyers, engineers, manufacturers, and merchants—and through these boards of mixed membership would exert on legislatures and the public a much stronger influence than they could exert by themselves.

State medicine has many objects in view. It aims not only to protect the public health, but also to increase it. In State medicine individualism is impracticable; for it is impossible for the individual to protect himself. The social co-operation, which in our days the State alone can enforce, is needed to promote security against disease and progress toward better average health and longer life. To take all possible precautions against the spread of infectious diseases is simply an act of good citizenship. Nothing but medical supervision will accomplish the objects of State medicine; and there are no agents so effective as physicians to spread through all classes of the community an educated sense of sanitary decency. Only the State can guard against dirty milk, corrupted water-supplies, impure ice, adulterated drugs, spoilt meat and fruit, and filthy and overcrowded tenements. Only the State can force the isolation of cases of contagious disease, the suppression of epidemics, and the exclusion of pestilences like cholera and yellow fever. In exercising such control the State needs every aid which medical experts in chemistry, bacteriology, and comparative pathology can place at its disposal. The medical profession itself hardly recognizes as yet how great promise there is in the further study of the connections between diseases in animals and in man—connections which smallpox, scarlatina in cows, tuberculosis in men and animals, and diphtheria already illustrate. Not even the State, that is, a single State or nation, can deal effectively with such a problem as the suppression of cholera or yellow fever. That is an international problem. The evils which the social and gregarious instincts of men create, by inducing the modern crowding into cities, must be socially remedied; and the most effective force which society can exert to this end is the influence of the highly-trained medical officer. Every physician should be a medical philanthropist and missionary, zealous to disseminate knowledge of public hygiene. The medical profession, therefore, needs not only full

knowledge of the history and functions of State medicine, but the intellectual and moral powers which will enable it to serve the State in these matters. These powers—particularly the powers of speech and writing which would give the profession influence with the mass of the population—come through early training and practice under guidance.

The trusted physician sees intimately many classes of society, whether he live in the country or in the city. In the city he sees the well-to-do in their houses, and the poor at the hospitals and dispensaries. In the country he visits all the different kinds of people in the town. The experienced physician is familiar with the causes of poverty and misery, and he is equally familiar with the ill effects of wealth and ease unaccompanied by mental and spiritual cultivation. He can recognize the socially normal and the socially abnormal, and distinguish unerringly between them. In the city he knows the evils which result from crowded tenements and dark, ill-ventilated working places; in the country he knows all about the wet cellars in which decaying fruits and vegetable are stored; the bad cooking; and the careless disposition of the household sewage on the surface of the ground near the dwelling. He should be the best adviser on all social defences against the physical evils which the greed, ignorance, or carelessness of individuals inflict on the community; on the building of hospitals, large or small, in city or country, and on the training of competent nurses, whether for hospital or family service. The physician should be the chief defender of society against the superstitions which still prevail, and the impostures which still thrive. His training being essentially the training of the naturalist, he should be the defender of the community against all forms of unreason. If the physician have the needed persuasive force, no one can defend society so effectually as he against those unreasonable persons who are constantly protesting against dissection, vaccination, and vivisection; for no one can understand so well as the physician the benefits which these processes have conferred upon the human race.

There is another important topic to which the attention of the medical profession has been given spasmodically, but not with the effectiveness which might have been expected—I mean the legislative control of medical practice. So long as diagnosis depended on guessing, or divining, or on a natural insight of which the seer could give no definite account, there may have been some excuse

for the absence of a law intended to insure the common people against ignorant physicians; but now that the means of diagnosis and prevention have become definite, the State may reasonably require every practitioner to know how to use them. The ignorant physician spreads diphtheria and scarlet fever, simply because he cannot recognize them. Now that we have definite means of diagnosis, treatment, and prevention, which only education can give knowledge and command of, it is fair—indeed, it is imperative—that the State should require of all practitioners a competent training. Some progress has been made in this subject during the past twenty years; but much remains to be done.

Lastly the physician needs thorough education, that he may hold his own in public estimation with other professional men who undergo a prolonged and vigorous preparatory training. Social power and standing come with recognized cultivation; and public confidence is given to men who are believed to seek truth for truth's sake, holding themselves free from the influence of inherited dogmas, consecrated phrases, and preconceived opinions concerning the desirable results of current inquiries.

I hope I have said enough to satisfy my hearers that the opportunities and potencies of modern medical practice are so new and vast that an ampler education is needed by the practitioner. How is this education to be obtained? The four years' course at the Harvard Medical School, and at all other good medical schools, is completely filled with various instruction and practical exercises. No more can be done by the student in those four years than is done. Undoubtedly all the teaching can be indefinitely improved, and the laboratory processes can be made more economical of time and effort; but no significant additions can be made to the amount of work done by the students in those years. On the other hand, it is highly inexpedient that the age at which students on the average graduate in medicine should be raised. The young men going out into hospitals and practice are quite old enough already—indeed, they are too old, for the earning of a livelihood is too long deferred, as are also marriage and family life. Whither turn, then, to achieve the great improvement in medical education which is absolutely indispensable for the future? We must turn to the period of school and college life—to the period which extends from the age of six to the age of twenty-one. Here it is that the enlarged education required by the physician is to be procured;

and here it is that the influence of physicians is needed to improve the course of public education. In the first place, the youth who is to be a physician must use well his schooltime from six to eighteen, and then go through college or scientific school; and in the second place, school, college, and scientific school all need to be improved, so that the naturalist mind may have a fair chance in them. In the grammar-schools and secondary schools of our country much time is wasted through repetitions and reviews, and exaggerations of grammar, arithmetic, and political geography. That time must be saved. Subjects important in the early training of persons who are to be physicians—such as the elements of natural science—are often omitted, to the injury not only of that class of pupils, but of all the children. In some of the best secondary schools an unreasonable proportion of the time is given to foreign languages; and finally, there is lack of connection between the secondary schools and the colleges and scientific schools, the requirements for admission to the latter not matching the graduation requirements for the former. For the present state of things the medical profession itself is somewhat responsible. So long as medical schools had no requirements for admission they sanctioned the idea that a young man whose education had been neglected up to his twentieth year could then turn to medicine as a profession, and expect to be well trained for it. So long as American society was in the rough, elementary, pioneering stage, physicians of that crude sort had their place, and a few of them became ultimately competent through the stress of actual practice; but that day is passed, and with it the old attitude of medical schools toward school and college education should become a thing of the past. The medical profession should insist that botany, zoölogy, chemistry, and physics receive due attention in elementary and secondary schools, and that English, both spoken and written, receive much more attention. They should insist that the elective system be so far developed in colleges and scientific schools that in those institutions the intending physician should be able to follow ardently and far the subjects preliminary to his chosen profession, and that the youth who naturally tends to observational subjects should have a fair chance to follow his bent. It is unnecessary to say that the additions made to the school studies, and the freedom of choice in colleges and scientific schools, would be for the advantage of all pupils; for all need at school the natural-science studies and the developed study of

English and of argumentative composition, while all would profit in the higher institutions by the abandonment of prescribed curricula. Physicians should be ready to serve on school committees and boards of trustees, in order to give practical effect to their opinions on this subject. The clerical profession has long been dominant in education; it is high time that physicians took a hand in that great public concern. They should fight at every turn the idea that there is more cultivation to be got from subjects which have no application in daily life than from those which are capable of application. They should urge medical schools to raise their own requirements for admission. It is a great improvement which has lately been wrought in the State of New York, whereby some academic subjects are required as preliminary to medical education. It was a great example which the Johns Hopkins University set us all by demanding a degree for admission to its new medical school. It is a step in the right direction which the Harvard Medical School has just taken in giving notice that in and after the year 1901 a degree in Arts, Philosophy, Science, or Medicine will be demanded for admission to the school. Nothing short of the period from six to twenty-five will hereafter suffice for adequately preparing a young man for medical practice. We want the whole of that period well filled and well used. We want it for the honor and dignity and serviceableness of the profession itself. We want it also for the just furtherance of the work which the community may reasonably expect of the profession.

The medical profession has before it an entrancing prospect of usefulness and honor. It offers to young men the largest opportunities for disinterested, devoted, and heroic service. The time has passed when men had to go to war to give evidence of endurance, or courage, or capacity to think quickly and well under pressure of responsibility and danger. The fields open to the physician and surgeon now give ample scope for these lofty qualities. The time has passed when the church alone asked men to devote themselves patiently, disinterestedly, and bravely to the service of their fellow-men. The medical profession now exhibits in highest degree these virtues. Our nation sometimes seems tempted to seek in war—that stupid and horrible savagery!—for other greatness than can come from vast natural resources, prosperous industries, and expanding commerce. The pursuits of peace seem to pall for lack of risk and adventure. Would it might turn its energies and its longing

for patriotic and heroic emotion into the immense fields of beneficent activity which sanitation, preventive medicine, and comparative medicine offer it ! There are spiritual and physical triumphs to be won in these fields infinitely higher than any which war can offer; for they will be triumphs of construction and preservation, not of destruction and ruin. They will be triumphs of good over evil, and happiness over misery.

II. DEFICIENT EXCRETION FROM KIDNEYS NOT ORGANICALLY DISEASED, AND SOME OF THE DISEASES PECULIAR TO WOMEN.

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INFECTION is one of the most absorbing topics in the healing art to-day. The enormous range of surgical infection is strewn with tragedies. A large portion of a surgeon's life-work is devoted to dealing with the complications arising from septic absorption. His satisfaction in his cases is secured only when he is certain that they have escaped it.

Infection in medical cases has been studied in every possible direction. Every new text-book contains further and greater investigation in each infection than its immediate predecessor, of a few months earlier, failed to record. The medical world is aroused in the pursuit of these inquiries. The last quarter of the present century will have erected a monument to medical advance whose equal has never been produced.

The era is just dawning upon us wherein a line of infections as old as the human race is about to receive the attention of the medical world. They are the *Auto-Infections*. They have, as yet, received but a minimum of our consideration. They enter the most largely into the causations of death, because they are almost always present in all fatal cases wherein traumatism has not acted a part.

Toxic materials always reside within the human body. They constitute the waste products of living beings. From birth to death they battle for supremacy. So long as they are plentifully

excreted, death is postponed. The skin, the pulmonary mucous membrane, the bowel, and the kidney constitute the avenues of escape of all toxic materials from our bodies. If one of these emunctories be crippled the initiation of death is manifest. We never prescribe for a medical case that does not present this crippling. The physician who busies himself with solving the problem of the initial departure from the proper performance of excretion of anyone of these emunctories enters a new field of labor. It is the most interesting one that he can invade to-day. In it he encounters myriads of human beings a long way ahead of the time when they consult medical talent. Herein he deals with the beginnings of disease. He soon learns to regard the causes of the diseases that he treats as far removed from the organs whose initial departure from healthy action must be held responsible for what he treats, as in gout, in pneumonia, or in rheumatism.

The chief sources of auto-infections are the tissues, the secreting organs, foods, and putrefactions. All of the secretions and excretions contain poisons. Feces, urine, bile, saliva, carbonic acid and sweat are poisonous. Even the blood is toxic. It is continuously being traversed by a current of toxic material. In health its elimination is incessant, therefore it does not kill. If its excretion is interfered with so that it become two and one-half times greater than the normal quantity it will produce death. The writer desires to call attention to only one of these emunctories in this paper—viz., the kidneys—and to one fault of these organs, and that is their *insufficient work*, independently of their organic diseases. He desires to direct attention to this phenomenon in only one class of patients, the gynecological patients. Women with sound kidneys, so regarded, alone are referred to. No allusion is here made to patients with organically diseased kidneys; such women are relegated to the nephrologist. Concerning them this declaration is laid down: *Very many gynecological patients suffer greatly from renal insufficiency, and properly selected diuretics will relieve many of their symptoms commonly referred to the reflexes from pelvic maladies.* Due attention to this condition assists greatly in curing these patients who are numbered by the thousands. These thousands are the ones who do not need the brilliant exploits of the gynecological surgeon. They comprise that vast number of women who frequent our offices twice or thrice a week for stated treatment.

Urine is composed of water and certain solids dissolved in it.

The amount of solids is proportionate to normal body-weight. This proportion is fairly constant—enough so to constitute a safe working base. If the solids are excreted in sufficient quantity, a normal condition exists. If they fall short of it, say 20 per cent., an insufficient quantity is excreted, a condition called “renal insufficiency.”

To arrive at a more definite conclusion I have had an expert physiologist construct the following table, showing the amount in grains of normal excretion of urinary solids in human beings weighing from 90 to 180 pounds. Since these figures refer to perfectly healthy human beings, it is safe to adopt a diminished amount of grains of excretion as a working basis. Accordingly, the two extremes of estimates of the urinary solids may be safely adopted as 511 grains :

Weight.		Urinary solids.
40 pounds	. . . . .	392 grains.
50 “	. . . . .	479 “
60 “	. . . . .	563 “
70 “	. . . . .	639 “
80 “	. . . . .	716 “
90 “	. . . . .	789 “
100 “	. . . . .	854 “
110 “	. . . . .	916 “
120 “	. . . . .	974 “
130 “	. . . . .	1028 “
140 “	. . . . .	1078 “
150 “	. . . . .	1150 “
160 “	. . . . .	1198 “
170 “	. . . . .	1237 “
180 “	. . . . .	1260 “
190 “	. . . . .	1300 “
200 “	. . . . .	1330 “

To estimate the urinary solids is an extremely simple matter. To be of value, we must understand in a general way, how much of solids each patient should excrete. Women according to height, weigh from 90 to 180 pounds. Reference to abnormally lean or stout women is not included in these extremes. Many women do not even weigh 90 pounds, yet they are perfectly healthy. Then, again, there are very many women who weigh over 250, or even 300 pounds. Such extremes of body-weight are disregarded. The amount of solids voided by healthy human beings, as stated before, may be assumed to vary from 500 to 1100 grains daily, according

to body-weight. Thus the woman weighing 90 pounds ought to pass 500 grains, and the woman weighing 180 pounds ought to excrete 1100 grains of urinary solids. It is an easy matter to estimate the amount of solids that women of intermediate weight should void.

Various working formulæ exist for estimating solids. It is understood that all solids of the urine are thus included. Innumerable articles have appeared in the past on the methods of estimating urea. The topic under consideration includes not only urea; it includes everything solid. The formula herein recommended is known as Haines's modification of Hæser's method. Its simplicity and speedy solution relieve it of all the objections belonging to all formulæ relating exclusively to estimating urea. It is this: *Multiply the last two figures of the specific gravity of the urine by the number of ounces voided in twenty-four hours and the product by $1\frac{1}{10}$.* Thus: If the amount of urine voided in twenty-four hours be 36 ounces and its specific gravity be 1021, the formula would read $36 \times 21 \times 1\frac{1}{10} = 831$, the number of grains of solids contained therein. These figures can be obtained at once upon measuring and taking the specific gravity, and the amount of solids can be calculated without a moment's delay. This estimate includes urea and all the other solids. Should we wish to estimate the amount of urea separately, that is quite another matter, requiring time and delicate chemical manipulation. This advantage exists in favor of estimating the amount of solids, that if there is insufficiency there is unquestionably a deficiency of urea existing also. In a large practice where such calculations are made daily, sometimes several in one day, the item of time-saving is an important one.

Renal insufficiency is extremely common. It is encountered in every period of life. Unquestionably we all suffer from it at times, as is indicated by nervousness, dyspepsia, bronchitis, neuralgia, or in some women by comparative amenorrhœa.

Urinary solids are a lethal poison when retained in sufficient quantities. The amount of poison in human urine required to kill is secreted by healthy persons in two and one-sixth days. Like other poisons, their effect depends upon dosage; if the dose be small the effect is inconsequential; if large the effect is more serious; if very large the victim succumbs. Any person with renal insufficiency may be considered as one who has retained urinary solids in

his blood, where they can produce their effect with precision. It is a matter of daily observation that we see gynecological patients with renal insufficiency who present amenorrhœas, neuralgias, pelvic peritonitis, dyspepsias, bronchitis, cutaneous eruptions, headaches, backaches, leucorrhœa, nervousness, insomnia, etc. Properly treated with diuretics and the usual gynecological therapeutics, such patients are relieved much more quickly than when diuretics are not employed.

Bouchard, through his numberless experiments, has recounted many curious facts concerning the toxicity of urine. The poisonous action of urine excreted by day during the period of cerebral activity produces a different effect from that excreted during sleep. Day urine is more poisonous than night urine. It causes convulsions. Night urine causes coma. Man elaborates two and one-fourth less poison during sleep than during an equal time of cerebral activity. Transfusions of urine lower temperature.

We often encounter subnormal temperatures in gynecological patients who present renal insufficiency. Such toxicity produces depression of the activity of the thermic centre in the medulla. Depressed temperature retards tissue metamorphosis, which in turn increases auto-infection.

Urea is diuretic. Its absence as seen in hepatic diseases is accompanied by a cessation of functional activity of the kidney even when that organ is healthy. Thus we see when the substance, urea—the *bête noir* of physicians—is absent abnormal conditions follow. To kill a man of 132 pounds weight requires one pound of urea. Such a man manufactures 302 grains of urea daily. Therefore, to be killed by his own product of urea it would require nineteen days of non-elimination. This substance constitutes one-seventh to one-eighth of the total toxicity of urine. Uric acid is very feebly toxic because it is made in far too minute quantities. The gouty man can have many hundreds of grains of urate in his deposits without being intoxicated by it. Creatin and creatinin possess only a small degree of toxicity. The coloring and other organic substances removed by charcoal filtration contribute at least one-half of the toxic power of urine. Decolorized urine must be used in double quantity to produce toxic accidents. Have we in this fact an explanation of the evil effects of renal insufficiency so frequently encountered in patients who pass large quantities of very light-colored urine?

Leucin, tyroxin, taurin, xanthin, hypoxanthin, and guanin produce scarcely any result in toxic experimentation. Hippuric acid can only become toxic in quantities formed by the animal in ten or twelve days, and is, therefore, considered very feebly poisonous. Ammonia is toxic but in a fraction which escapes us. The conclusion is reached that urea, together with the coloring and other organic substances removed by charcoal filtration contribute about two-thirds of the total toxicity of a urine. What constitutes the other one-third? There remain only the mineral substances, and to them the remaining third of the toxic action of urine belongs. These are composed of earthy salts, the salts of potassa and the salts of soda. Earthy salts comprise only one-seventh of the mineral substances, and are practically non-toxic because of the difficulty in maintaining their solubility in the blood plasma. Therefore, as toxic agents they may be disregarded. The salts of potassa, the chloride, the sulphate, the phosphate, and the phenylsulphate constitute one-fourth of all urinary mineral substances. They are very toxic. The chloride of potassium is the most poisonous. All salts of potassa are fatally destructive to unstripped muscular fibre. Therefore, in sufficient quantity they arrest heart action. In renal insufficiency there is produced an accumulation of mineral substances, particularly potassa. Hence we find, among uræmic phenomena, in certain conditions, a preponderance of the action of potassa, which may represent two-thirds of the total toxicity instead of one-third.

The salts of soda possess only a feeble toxicity. It is only exceptionally that they play an important part. Thus it will be seen that Bouchard's experiments teach us that in the toxicity of urine, urea, and the coloring and other organic substances supply two-thirds and potassa one-third of the totality of the phenomena causing death. Such a death is said to result from *uræmia*. It is preceded by the appearance of chronic or paroxysmal nervous accidents, as cephalalgia, dyspnœa of the Cheyne-Stokes type, coma, convulsions, associated with disturbances of calorification and other symptoms of the pre-uræmic period. Urinary poisoning shows itself especially in the nervous system.

It is not yet incontestably settled what other tissues are affected by it especially. Four years ago Bond (*Amer. Journ. of the Medical Sciences*, September, 1891) attempted to show that serous membranes are liable to take on inflammations in patients with renal

insufficiency. He would see in the patient who has recurrent attacks of pleurisy one who retained too much urea. Confirmatory of this idea are the recurrent pleurisies so often encountered in the patients who die of chronic nephritis. Similarly we meet with many patients who have repeated attacks of bronchitis, with profuse secretion, produced by renal insufficiency. Even their breath, in many cases, has a urinous odor, indicating that such patients are trying to excrete urinary solids through the pulmonary mucous surfaces. Such patients are always, and never otherwise, cured by the supervention of free urinary excretion, spontaneous or induced. Many persons cannot take cold without suffering temporary renal insufficiency, which in turn causes a bronchitis or a diarrhoea. Who does not know the superb effect, in such cases, of Dover's powder, with its powerful diuretic action, or of sweet spirits of nitre, in small hourly doses?

On the nervous system we have unquestioned evidence of the deleterious effects of urinary solids in the production of the various neuralgias. Lithia and small doses of mercury quickly remove the hyper-accumulation, and the neuralgia disappears. Mucous membranes respond very decidedly to the continuous or to even the intermittent dosage of renal solids. Proof of this is seen in the serous diarrhoea of uræmia, where the patient may be said to be attempting to urinate from the intestinal mucous surface. Gastro-duodenitis illustrates the same fact concerning too much uric acid remaining in the system. Unquestionably the same idea is seen carried out in contributing to the perpetuation of *chronic perimetritis* so often encountered, for it is a simple clinical fact that the administration of stimulating diuretics in cases presenting this condition constitutes one of the most powerful adjuvants to other treatments.

In the class of renal insufficiency cases herein referred to we do not see our patients die. We witness only the minor effects of urinary toxicity. For illustration: divide fatal toxicity into ten parts. The vast majority of the gynecological patients with renal insufficiency may be said to have retained in their systems four, five, six, or even seven of the ten parts of the fatal amount. What symptoms do they present? Always those referable primarily to the nervous system; because lethal urinary poisoning shows itself at its close in coma or convulsions. Long before coma or convulsions are seen an interesting array of minor nervous manifestations is

exhibited. Some are mild, some severer, some are very severe. We encounter these same symptoms all through our practice in the old and young of both sexes—indeed, a large share of a physician's life is spent in getting rid of such symptoms. Such patients have neuralgias, bronchitis, dyspepsia, cutaneous eruptions, headaches, backaches, leucorrhœas, nervousness, insomnia, etc.; it is no uncommon thing to meet with such symptoms in women who have suffered from them for years. The removal of the renal insufficiency in them cures these symptoms most satisfactorily. There is an immense deal of satisfaction in seeing a properly administered diuretic remove from a renal insufficiency patient an amenorrhœa, or a sacralgia, or an oöphoralgia, or a pleurodynia, or a dyspepsia, or bronchitis, that has resisted the routine gynecological treatment.

Patients suffering from renal insufficiency should be regarded as poisoned patients and treated accordingly, for they are cases of veritable uræmic poisoning. They present symptoms varying in intensity according to dosage. Women passing only 50 per cent. of the normal amount of urinary solids are extremely numerous. It is simply astonishing to see how common renal insufficiency is in gynecological cases. Women passing not to exceed 400 grains of solids daily present various degrees of nervous irritability. When the amount is lessened to, say, 300 grains or less daily, the condition of nervousness becomes a very serious and logical factor. Let a patient passing only the latter amount of urinary solids take a severe cold, and she will develop a bronchitis, or a severe neuralgia, or a fresh attack of perimetritis, or a pleurisy, or some other malady equally grave. When the solids are diminished still further, as to 200 grains in twenty-four hours, we shall find the nervous system so seriously invaded that our most solicitous attention is demanded. And with the amount still further diminished, say to 100 grains of solids per diem, our patients will be found dangerously near the verge of uræmic convulsions, the condition not infrequently found in the last weeks of gestation. What are the evidences that certain tissues are invaded by urinary solids, that they present symptoms that are to be associated with renal insufficiency? It is difficult perhaps to answer that question dogmatically. To give an unassailable reply involves a chemical analysis of the tissues presenting symptoms that may be alleged to arise from urine poisoning that has not been made so far as our reading extends. I am not aware that the pelvic peritoneum, or a bronchial

tissue, or a nerve that presents urgent symptoms in a case of renal insufficiency, has been examined by a chemist and declared to contain urinary solids. Therefore the *experimentum crucis* may be said to be wanting. Yet, notwithstanding this deficiency, we shall, till such chemical analyses have been made, be compelled, from a clinical standpoint, to associate very many urgent symptoms with the existence of renal insufficiency. Synthetically, however, we have a great amount of proof that the urinary solids *do* produce symptoms in certain tissues, and that is the therapeutics. For, if appropriate diuretics are used in such cases, it will be found that the excretion of urinary solids will be increased, thus indicating that they are called in from the tissues that do not contain them normally, and at the same time the urgent symptoms subside.

To illustrate: Mrs. C., multipara, presented, in addition to a marked general metritis associated with a deep, double laceration of the cervix, an obstinate bronchitis with profuse secretion. The cough produced such violent succussion of her pelvic organs that her metritic symptoms were intensified in the way of pain and greatly decreased ability to go about her daily duties. Vesical irritability and increased leucorrhœal discharges added to her general misery. Soon her digestion was deranged, and a degree of anæmia supervened with its train of nervous symptoms. Cold weather brought on bronchitis, from which she was comparatively free during the summer. Winter after winter she had been an invalid, submitting to gynecological treatment fruitlessly. She had spent the winter season in southern France, in Italy, in Spain, in Cuba, only to find invalidism return upon coming home. At length the modern treatment of dilating, curetting, and operating on the cervix came to us, and she passed successfully through that line of procedure with the result of a vast improvement in her general condition. Still the advent of winter developed her bronchitis, which was followed by bladder distress, leucorrhœa, and gradual running down. Not till the second winter after the operations mentioned were the kidneys questioned. It was found that 298 grains only of urinary solids were passed, when she ought to have voided 850 grains. This discovery was made in 1890. She was at once put upon a stimulating diuretic, tonics, and a laxative. In thirty days her urinary solids were increased to 950 grains, the cough had entirely disappeared, and she was on the high road to recovery. After March 1st she had resumed her social obligations,

every old symptom had disappeared, and she reached a degree of health that she had not known for years.

The only explanation of the cure of this patient is to be found in the removal of the condition of renal insufficiency. The bronchial mucous membrane was apparently attempting to play the part of the kidneys, and the irritating quality of the sputum perpetuated the cough. The vesical mucous membrane, irritated by the acrid character of the urine that was passed, as well as by the violence of the contractions of the abdominal muscles in coughing, caused the irritability of that viscus. The increased leucorrhœal discharge could be produced by the vicarious attempt of the endometrium to discharge urinary solids in its imperfect way, aided by the continual engorgement of the uterus incident to the sudden and violent retardation of the venous blood-flow that always accompanies the effort of coughing.

CASE II.—Miss G., aged twenty-three years ; had menstruated only five times in the previous year. She had backaches and headaches, circumpelvic pains increased by exercise, an albuminous leucorrhœa and great nervousness. The ascending colon was loaded with feces. She should have voided 850 grains of urinary solids daily, but she passed only 485 grains. In other words, her daily passage of urine solids was almost 400 grains. A very aggravating element in this case was the impacted colon. Putrefactions in such a condition of the intestine are very noxious. They increase urinary toxicity very considerably. Conversely, suppression of intestinal putrefactions always diminishes urinary toxicity. Bouchard showed in 1882 that the alkaloids of putrefaction, which are very poisonous, increase in a parallel manner in the feces and in the urine. Nothing is better shown to-day than the parallel relation between the increase of indican in the urine and indol in the feces. This patient presented one other symptom that I have often encountered, viz., a urinous odor of her breath. Evidently she was poisoned by the urinary solids or by what would be urinary solids if they had passed through the kidney.

Treatment consisted of laxatives and diuretics. Her urinary solids were increased to over 1300 grains for a number of days. She continued the use of the remedies till regular menstruation supervened. As soon as an insufficient amount of the solids again appeared the comparative amenorrhœa returned. A recurrence to diuretics again made her monthly sickness appear regularly.

Eventually I instructed her how to calculate the amount of her own urinary solids, supplying her with a urinometer and a graduate, and to employ the remedy for their deficiency. In this patient there was no pelvic malady to account for her amenorrhœa—a fact more forcibly illustrating the bad systemic effects of renal insufficiency.

CASE III.—Mrs. B., aged thirty-six years, the mother of three children, the victim of many abortions, with no cervical nor perineal laceration of pathological interest, complained of pelvic-weight, general rachialgia, tender spine, pleurodynia in left chest, excessive nervousness and moderate menorrhagias. She had a moderate metritis. Both broad ligaments were free, with no uterine ankylosis. She weighed 154 pounds, and should have passed 900 grains of urinary solids. She had gastro-intestinal fermentations. She had refused a needed dilating and curetting to a number of physicians, restricting their gynecological therapeutic exploits to local treatments and tampons, which comprised the full extent of their treatment of her. Her urinary solids weighed only 478 grains. Local treatments, tampons, lithia, and a tonic cured her in four months. Her urinary solids were kept above 1000 grains daily for many weeks. Renal purgation—if such an expression is permissible—seemed to be absolutely essential to her recovery.

Similar illustrative cases could be multiplied almost indefinitely. The vast majority of gynecological cases refuse operative procedures. The majority of physicians are incapable, from environment and from needed training, of performing gynecological operations. They are restricted to office consultations and treatment of such manner. If they will add to their therapeutic armamentarium, in cases demanding it, an array of effective diuretics they will be surprised to see many otherwise refractory cases improve or regain good health upon paying due and needed attention to renal insufficiency.

No intimation is here given that it is the most important factor in disease of women. To set up such a claim would be most absurd. The aim of this article is solely to call attention to one line of treatment that has been all but universally neglected heretofore, and to invite observations and original investigations.

There is the gravest reason for thinking that a very close relation, even that of cause and effect, exists between renal insuffi-

ciency and pelvic disorders. The developmental phase of the renal and generative organs constitutes that reason. Embryologically these two sets of important organs arise from the same source. The mesoblast in the ovum gives rise to the muscles, bones, circulatory and lymphatic systems, the urinary and generative organs. From this fact it becomes an easy matter to infer that derangements in one set of these organs can produce, in a reflex way, if you please, or at least are very frequently associated with, derangements of the other.

Since observation shows the numerous cases of co-existence between renal insufficiency and neuralgias, mucous membrane disorders and serous membrane inflammations, one cannot but question the possibility, of this insufficiency producing or permitting amenorrhœas, dysmenorrhœas, leucorrhœas, and attacks of pelvic peritonitis. It is strongly emphasized that the position is *not* assumed that all cases of these disorders are produced by renal insufficiency; but, from the fact that many of them are relieved by including in the treatment remedies that increase the urinary solids, the conclusion cannot be resisted that cause and effect actually exist between many of them and the deficiency of urinary ingredients.

DISCUSSION.

DR. L. DUNCAN BULKLEY, of New York: I regard the subject presented one of the most important we have heard. Since as long ago as fifteen years, in treating acne, eczema, and like diseases of the skin, I have followed out the plan of setting in operation whatever would contribute to the general health, such as regulating the diet, and especially of acting upon the various emunctories of the body. It has been a common experience for women to tell me of relief from painful menstruation following such treatment of their general condition, or of the disappearance of amenorrhœa and other pelvic troubles. The acetate of potash forms a large element in my practice, a remedy which rightly used acts well upon the secretions of the kidneys. In such cases I find myself giving this alkaline diuretic in doses of fifteen grains, well diluted, half an hour before meals, with cascara to relieve constipation, and I have come to expect that under treatment these uterine troubles will pass away.

COMMUNICATIONS.

I. DISCUSSION ON THE PRESENT STATUS OF THE SURGERY OF THE BRAIN.

1. THE PRESENT STATUS OF CEREBRAL SURGERY.

By EDWARD D. FISHER, M.D.,
NEW YORK.

THIS subject has been before the profession for some years and has passed through various epochs. The enthusiasm of the early writers was succeeded by opposite views, but I believe that a more moderate and truer estimate of its value in various diseases now exists.

To properly understand its position we must consider the class of cases in which surgery may be of value. I think that early in this epoch the desire to operate laid under the surgeon's knife many cases which were inappropriate, and the unfavorable results were due to inexperience and bad surgery. Again, there was often too great recklessness or too much timidity, so that in the latter case we had the danger of the operation and yet not the advantage of thorough exploratory work.

Our present experience seems to show that we can expose the brain to a great amount of manipulation, or even to extensive ablation, without endangering life.

The methods of precision in the operation on the skull proper have been much improved, leading to decrease of the hemorrhage and consequent shock, and also to lessening of the time required for the operation.

Operation is indicated in various diseases of the brain, and, while in some cases, experience has not yet definitely established its utility, still we have a theoretical basis for the operation which justifies it, especially as with proper care the mortality is not high.

The special indications for operations are the following: 1st,

traumatism; 2d, localized epileptic seizures; 3d, athetosis, with or without epilepsy; 4th, tumors which are localizable; 5th, abscess; 6th, cerebral and especially meningeal hemorrhage; 7th, microcephalus.

The results as shown by statistics are not particularly favorable. The percentages of recoveries I will leave for those to give who have been assigned to the special subdivisions of the subject. One case, however, if successful, should have much greater weight in the indorsement of the operations than many failures.

I have had a number of cases in which operation has been performed for localized epileptic seizures with more or less favorable results. I shall here refer to only one as illustrating the benefit which may follow in cases where an operation is performed long after the injury.

The patient, B., fell from a tree, injuring the right side of the skull. Five years later epilepsy supervened. He had been trephined, and merely a button of bone removed before he came under my care, without any benefit, however.

I state this to emphasize the uselessness of such incomplete operations.

The operation was performed by Dr. George Woolsey, in Bellevue Hospital. There was found an exostosis of bone pressing into the arm centre. This was removed and the patient made an excellent recovery.

Immediately after the operation the seizures were very frequent, but became gradually less, so that at present, three years later, there have been no attacks for one and a half years.

In regard to athetosis, when it is due to cortex irritation, and probably it is in the majority of cases, and certainly so if associated with epilepsy, removal of the cortex centre is indicated.

This is shown in a case also operated on by Dr. Woolsey for me in which the bone-flap method was employed. I located the arm and hand centres by the electrode. There was an absolute cessation of the athetosis for six weeks; the evidence was complete, therefore, that we had reached the seat of the lesion.

The mistake made was that an insufficient area of the cortex was removed. This would necessarily cause a permanent paralysis, but this latter condition is preferable to semi-paralysis and athetosis. We are dealing with a most hopeless class of patients, and this is the only door open for relief.

In regard to tumors, I would say that whether we can remove the growth or not, relief from headache and convulsions is often obtained by operation.

My own experience in this respect agrees with that of Horsley.

I reported a case before the American Neurological Association in June, 1895, of tumor of the cerebellum, which had not been localized during life, owing to the absence of any localizing symptoms. The operation was performed by Dr. J. F. Erdmann, of New York. We selected the point of pain, which was distinctly located over the right eyebrow, as the site of the operation, having no other symptom of localization to go by. We found nothing, but for the ten weeks following, during which the patient lived, there was absolute relief from pain and convulsions.

Post-mortem revealed a tumor lying in the right cerebellar hemisphere. Can anyone say that the operation was not justifiable, or indeed, imperative, judging from the results? In regard to the method of operation, I would say that I am in favor of the bone-flap operation, as we thus secure a complete restoration of the skull, and thus have no danger from subsequent injury.

Adhesions do not take place unless we have injured the dura, or it is thickened by disease, and in the latter case I recommend its removal.

If the dura is merely opened and then sutured, the union is complete, as shown in an autopsy I made two years following the operation.

In regard to the union of the bone flap, while it is advisable to preserve the periosteum, it is not at all necessary.

I have not found that the use of the chisel in the bone-flap operation in any way increases the shock. In my last six cases I kept my hand on the pulse the whole time, and observed no special change under the stroke of the hammer. There is always a sensible weakening of the pulse in all cerebral operations, which increases with the length of time consumed, and this was, of course, present in these cases.

In cases of tumor I would advise the removal of the bone, as we can thus secure greater space for exploration if necessary.

I would close by saying, let the operation always be a complete one, as so much danger is incurred in all cases that it is folly not to go far enough to ascertain the exact condition we are dealing with. Again, although statistics do not show many good results,

still there is often a possibility of relief if not cure, and, therefore, as most of these cases are otherwise hopeless, it becomes the duty of the physician, in the light of our present experience, to advise operative interference.

II. DISCUSSION ON THE PRESENT STATUS OF THE SURGERY OF THE BRAIN.

2. A CONTRIBUTION TO BRAIN SURGERY, WITH SPECIAL REFERENCE TO BRAIN TUMORS.

BY M. ALLEN STARR, M.D.,
NEW YORK.

GENTLEMEN : Before entering upon the subject of operation for brain tumors, which I have been asked to discuss, I desire to say a few words regarding operative interference in cases of epilepsy. It is, of course, admitted by all that in ordinary idiopathic epilepsy with general convulsions, or with attacks of a *petit mal* type, there is no reason for any surgical interference. The only type of epilepsy in which a question of operation can arise is that of so-called cortical epilepsy, where an irritant lesion of one region of the brain produces localized spasms. Such lesions may be traumatic in origin, from fractures, localized meningitis, small hemorrhages, or cysts; or the epilepsy may be the first sign of a beginning tumor, abscess, or sclerotic patch. It is for this class of cases that operations have been very largely undertaken in the past and are still being done.

In my book on *Brain Surgery*, published in March, 1893, I collected twenty-nine cases from literature and recorded thirteen cases of my own, in which operations had been done for the relief of this condition. Thirteen of these were reported as cured. Since that time a very large number of cases have been reported, and I have had eight more cases operated upon. I will not take your time by any detailed statement of these cases, but wish to say that I am exceedingly disappointed with the final result of operations in this type of disease. Experience seems to show that, although after an operation a cessation of attacks may occur, these attacks are almost certain in the end to recur, and hence the patients

are not actually cured. Therefore I am becoming more and more reluctant, even in cases of well-defined cortical epilepsy, whether of traumatic or of spontaneous origin, to recommend surgical interference.

In cases in which the brain itself has been injured and a cicatrix has formed, there exists a focus of irritation, and it is not possible by excision of this cicatrix to produce a result very different from that which is already present, for the cicatrix of the incision made by the surgeon is little different from that produced by trauma, and hence in these cases I regret to say that little permanent effect is produced.

Turning now to the subject of brain tumors, it must be stated at the onset that the experience of investigators during the past three years has seemed to confirm the statement which I made in *Brain Surgery*, that only about 7 per cent of tumors of the brain are open to operation. The difficulties in the way of operation in brain tumors are, first, the difficulty of locating the tumor accurately from the symptoms alone, and, second, the difficulty of reaching the tumor when accurate localization is possible.

There are a number of distinguished surgeons who have advocated a removal of a portion of the skull in every case where the diagnosis of brain tumor is made, irrespective of the possibility of locating the tumor, and irrespective of the possibility of excising it. The object of such an operation is to relieve the intra-cranial pressure produced by the growth of the tumor, and thus to relieve the symptoms of headache, vertigo, vomiting, and optic neuritis. The experience of many surgeons who have trephined for brain tumor without finding it, but who have seen a certain amount of relief to these symptoms after an operation, has led to this suggestion. Thus Weir,¹ Park,² and Horsley³ have recorded cases in which considerable relief was obtained. Clarke and Norton⁴ operated for the relief of pressure by taking out a section of bone from the parietal region. The headache and the optic neuritis subsided after the operation, but inasmuch as the tumor was not removed the symptoms gradually returned, and the relief lasted only about five months. Diller,⁵ operating under the same circumstances, was not equally successful in relieving his patient, for the

¹ American Journal of the Medical Sciences.

² Dennis's System of Surgery.

³ British Medical Association, 1893.

⁴ British Medical Journal, April 13, 1894.

⁵ New York Medical Record, March 22, 1895.

symptoms continued about the same after the operation, and the patient died a month later. Albert¹ reports three cases operated upon in this manner. In one there was no improvement whatever, in the other two a slight improvement, lasting through a month or six weeks, was obtained.

Horsley has urged this procedure very strongly, and has even gone so far as to state that it may have a beneficial effect upon the growth of a tumor. He has recorded two cases in which relief of intra-cranial pressure has been followed, not only by a subsidence of the symptoms, but apparently by a progressive decrease and final absorption of the tumor; the patients recovering after a year from all cerebral symptoms.

I have recommended this procedure in one case at the Presbyterian Hospital in a patient seen with Dr. A. H. Smith, and subsequently operated upon by Dr. McCosh. The man had all the symptoms of a tumor of the corpora quadrigemina, with very great distention of the ventricles, producing a tremendous increase of intra-cranial pressure. The removal of a considerable section of the skull from the parietal region relieved his headache for a few weeks, but had no effect upon the optic neuritis or upon the other symptoms, and he subsequently died.

These facts should certainly be considered in the management of any case of brain tumor. And while at first sight it may appear that the operation of trephining in such cases merely prolongs the life of a patient whose sufferings are extreme and whose death is sure to follow, and is in no sense curative, yet it is well known that surgeons undertake operations for the removal of tumors in other parts of the body, even when it seems probable that these tumors will recur; and there are many patients who prefer to take the risks of an operation in order to secure a longer lease of life. It is also to be remembered that a marked change in the circulatory conditions, consequent upon the relief of the intra-cranial pressure, may in some cases aid in the effect of the absorptive power of some drugs. For it is not to be forgotten that there are cases of brain tumor in which the diagnosis is perfectly certain, which have recovered under the use of mercurial inunctions together with very large doses of iodide of potassium. Oppenheim,² in his recent monograph on brain tumors, calls particular attention to this fact, and

¹ Wiener Medicinisch. Woch., 1895, Nos. 1, 2, 3.

² "Die Geschwülste des Gehirns," Wien, 1896.

I desire to put on record a case which offers striking confirmation of it. I do not allude in this connection to cases of gummy tumor, for I think it is generally admitted that under the American system of treatment by inunctions of mercury, continued to the point of salivation, and very large doses, as high as 500 grains a day, of iodide of potassium, gummy tumors can be absorbed. I have, personally, records of four such tumors absolutely cured and now under observation a year or more since the cure, and I have no doubt that my experience in this respect can be duplicated by many who are present.

The following case, however, is one in which syphilis could be absolutely excluded. The patient was a boy, sixteen years of age, of perfectly healthy parents, there being no direct or indirect history of syphilis in either parent, and the boy himself presenting no evidence, direct or indirect, of having had the disease. In March, 1895, he began to suffer from a disturbance of his eyesight, and it was noticed that his eyes had a peculiar appearance. He was taken to a certain specialist in New York, who immediately discovered muscular insufficiency, and divided the internal recti without any relief. Two weeks later he began to suffer from very intense headaches, vomiting, and marked mental dulness, and it was noticed on every occasion that he staggered slightly in walking. Lateral oscillation of the eyeballs was then noticed, and his headaches, which increased in intensity, interfered with his sleep at night. On April 24th, when I first saw him in consultation with Dr. Story, of Flushing, L. I., the boy was very ill. He was confined to bed, and any motion increased the intense headache from which he constantly suffered. He was extremely emaciated, and frequent vomiting was attended by great vertigo and prostration. His eyes were prominent, his pupils were dilated, there was a slight deviation of the left eye outward, he saw double, vision was reduced two-thirds, and there was very marked nystagmus on any lateral movement of the eyes. Examination by the ophthalmoscope revealed a double optic neuritis, with great distention of the veins, but without hemorrhages in the retina. There was no paralysis of the face, but he complained of numbness in the left side of the face and some weakness in the muscles of mastication on the left side of the jaw. His tongue deviated to the left. There was no paralysis or ataxia of the hands, and no disturbance of sensation in the extremities or body. There was no paralysis or ataxia

of the legs when at rest, and his knee-jerks were normal. There was no clonus. On standing up, his head fell forward, but he was able to straighten it with some effort, holding it, however, somewhat forward and toward the left. He staggered painfully in standing and in walking, so that he was unable to walk without assistance. The staggering was of the type recognized as cerebellar. There was considerable ringing in the left ear, but his hearing was the same on both sides. He had had on three occasions retention of urine which had to be relieved by a catheter, and he was extremely constipated.

With these general symptoms of brain tumor, and with the local symptoms of cerebellar disease, together with an affection of the fifth, eighth, and twelfth nerves on the left side, it seemed evident that this boy must have a tumor involving the cerebellum and producing compression of the left side of the cerebral axis; a tumor, in a word, whose position was such as to make any operation absolutely impossible. In the absence of any history of syphilis it seemed proper to give an absolutely unfavorable prognosis, and yet to resort to inunctions and large doses of iodide as affording the only possible hope. These were immediately begun and the iodide rapidly run up to 250 grains a day. A steady improvement began in about two weeks after the treatment was instituted, and by June 15th he was up and about, without headaches, without vomiting, and walking without assistance quite well. He still staggered slightly, however, with a tendency to go toward the left; his tongue still deviated to the left. The left side of his face was still hyperæsthetic and at times painful. His eyesight was improved and the optic neuritis was subsiding. The improvement went on during the entire summer, and at present the boy is quite well, with the exception of nystagmus and a slight right facial paralysis which has developed slowly. The appearance of his eyes is such as to suggest the previous existence of a neuritis, though his sight is normal. He is still taking two drachms of the iodide of potassium daily.

This case then shows that even in some individuals where there is no history of syphilis medical treatment for a brain tumor occasionally succeeds. Whether this treatment may be aided by diminution of the intra-cranial pressure may be left an open question.

In three cases of cysto-sarcoma, in which the diagnosis was confirmed either by operation or autopsy, I have seen very great im-

provement in the symptoms follow a course of treatment with mercurial inunctions and iodide of potassium. The only manner in which such relief of symptoms could have occurred must have been by an absorption of the fluid in the cystic spaces of the tumor. In another case of cerebellar tumor this treatment was, however, without effect.

It must, therefore, be admitted that anything which diminishes the intra-cranial tension in cases of tumor may relieve the symptoms for a time, hence trephining for the relief of pressure is justifiable.

Turning now, however, from symptomatic treatment to the radical cure of brain tumors by removal, it is to be remembered that the necessary preliminaries to any operation for brain tumor must be accurate diagnosis of its position and a reasonable possibility of reaching it.

First, in regard to the diagnosis, it is now possible to distinguish sharply between the general symptoms common to tumors in any location—such as headache, optic neuritis with consequent blindness, vomiting, vertigo, mental dulness, polyuria, and general exhaustion—and those that are strictly local in their significance, such as spasms, paralysis, the various forms of aphasia, hemianopsia, anæsthesia, cerebellar staggering, rotary movements, and cranial nerve palsies. There is one local symptom not generally known to which I desire to call your attention. It was first pointed out by Macewen. It is a change in the percussion note elicited by auscultatory percussion of the skull. I can confirm Macewen's statement that on the side of the tumor or abscess there is sometimes found a clearer, higher-pitched, and more resonant note than upon the opposite side. This is not uniformly obtained. Horsley has recently noticed that tenderness to pressure is often found over a tumor when tenderness to percussion cannot be elicited. It is upon the local symptoms that the decision with regard to the possibility of operation distinctly rests. In a small proportion of brain tumors it seems easy to determine the fact that the tumor must lie in a definite position, and if that position is one upon the convexity of the hemisphere, where access to it through the skull is easy, it seems justifiable to undertake an operation. Yet my own experience and that of other operators has convinced me that even in regard to these local symptoms mistakes are possible.

Thus in a patient operated upon by Dr. McBurney for me in

November, 1895, a patient who had been carefully watched since May and had presented symptoms of a tumor located in the arm centre of the left hemisphere (viz., all the general symptoms of brain tumor, and spasms beginning in and for a time limited to the hand and face, followed by temporary paresis), a large exposure of the cortex failed to reveal the existence of a tumor on or near it, and the subsequent autopsy showed that the tumor (a sarcoma) had lain deep within the centrum ovale and had invaded the basal ganglia, although the symptoms pointed distinctly to the cortex as its point of origin. I think it is still impossible to distinguish accurately between cortical and subcortical tumors, and that no practical advance has been made in the differential diagnosis since the classical article of Seguin and Weir, published in 1888.¹

Another difficulty in the way of operation is the fact that the nature of the tumor is always a matter of uncertainty until the tumor is exposed. Thus in a case operated upon by Dr. McBurney for me in May, 1895, where every symptom pointed to a tumor of small extent in the leg centre of the right hemisphere, it was found at the operation that a very extensive glioma occupied both central convolutions and extended downward as low as the face centres, so vascular in its character as to make its incision or excision impossible, and so imperfectly defined in its extent as to make it impossible to accurately determine its limits. I am willing to admit that in a case such as this very extensive excision of the brain is possible. Thus, in September last, in London, I saw Mr. Horsley cut out a portion of brain substance, measuring four inches by three inches in surface extent, and one and a half inches in thickness, from the motor area of the brain for the relief of chronic congenital athetosis with paralysis, and by careful tying of the vessels before the brain itself was incised—the method employed being that of passing horse-hair sutures with an aneurism needle deep into the brain and out again all the way around the contemplated incision—he caused little hemorrhage, and the life of the patient did not seem to be endangered by the extensive loss of brain substance. It is also well known from the experience of treatment in brain abscess that a large amount of cerebral tissue may be lost without fatal result, and the experience of Von Brannmann and of Czerny has confirmed the possibility of large exci-

¹ Amer. Journ. Med. Sci., July-Sept., 1888.

sions of glioma of the brain without loss of life. Yet here again the fact confronts us, that, although the patient may recover from the operation, he does not recover from his disease, for symptoms of a permanent character remain, which insure a life of invalidism. It is only when the tumor is small, lies on but does not invade the cortex, and can be removed without serious damage, that the prognosis is absolutely good. This was the condition in an angioma removed by Dr. McCosh at the Presbyterian Hospital in November, 1894. The patient had developed epilepsy with maniacal attacks after a blow on the left parietal region which had left a very tender and painful spot on the skull. There were few symptoms of tumor, but trephining at this spot revealed the existence of a small angioma, easily removable. The boy recovered, and has been entirely well ever since.

Secondly, coming now to the record of what has been done in the treatment of brain tumors by operation, I have summed up the results in the following table. This table is made from the list of brain tumors to be found in my *Brain Surgery* up to 1893 (97 in number) and from the list of tumors here appended (65 in number) which I have gathered from medical literature between 1893 and January 1, 1896 :

TABLE I.—RESULTS OF OPERATIONS FOR BRAIN TUMOR.

	Cerebral.	Cerebellar.	Total.
Total number of cases operated upon for brain tumor	137	25	162
Cases in which tumor was not found	39	9	48
Cases in which tumor was found but not removed	5	2	7
Cases in which tumor was removed and patient recovered	65	7	72
Cases in which tumor was removed and patient died	28	7	35

It will be seen that these cases fall into three categories :

1. Cases in which the tumor was not found at the operation. These cases number forty-eight, of which thirteen only have been recorded within the past three years. The errors in diagnosis which have led to a futile operation have been in the majority of these cases inevitable. In many of the cases the symptoms have pointed to the motor area or to the cerebellum as the site of the tumor. The tumor has really lain either deep beneath the cortex,

or at some distance from the motor region, or in the frontal lobes. Since tumors at some distance from the motor region may cause motor symptoms indirectly by irritation or by pressure, it seems impossible in some cases to avoid this first error. The occurrence of ataxia of a cerebellar type from lesions of the frontal lobes has led to the second error. Bruns¹ was the first to point out the fact that frontal lesions often cause ataxia of a cerebellar type, and this fact has been confirmed by Cenas,² Dinkler,³ and Hermanidas.⁴ In a recent monograph on brain tumors, Bruns⁵ has pointed out differential points between the frontal and cerebellar ataxia, as follows: frontal ataxia is often associated with hemiparesis or with monoparesis; there is usually a localized tenderness to percussion or to pressure over the frontal region; optic neuritis occurs late in the course of the disease, and mental dulness is an early symptom. In cerebellar ataxia there is rarely hemiplegia; there is no tenderness over the frontal region; optic neuritis with hemorrhage in the retina occurs very early in the course of the disease, and is attended by blindness, and while other symptoms of brain tumor, such as vertigo, vomiting, and slowness of pulse, develop early, mental symptoms, such as dulness and apathy, occur late. These points should be noticed, inasmuch as a staggering gait has been supposed to be quite characteristic of cerebellar lesions. It is well known that operations for cerebellar tumors have a more unfavorable prognosis than those for tumors in any other portion of the brain. In fact, out of twenty-five operations for cerebellar tumor, while seven cases have recovered from the operation and have lived a few weeks, but two have been really permanently benefited. It is possible, therefore, that operation has been refused to some cases which have been considered as cerebellar because of the gait, when as a matter of fact the tumor lay in the frontal region and was accessible. In a recent case of Stewart and Annandale⁶ of successful operation for cerebellar tumor, considerable stress was laid upon the fact that the pain suffered was in the opposite frontal region. This is another indication of the intimate relation between the cerebellum and the frontal lobes. I think it is evident, therefore, that with regard to the cases in which tumor has not

¹ Deut. Med. Woch., 1892.

² Loire Méd., March 15, 1893.

³ Deut. Zeitsch. f. Nervenhe., vol. vi., 435.

⁴ Neurolog. Centralt., 1895, p. 181.

⁵ Gehirntumoren. "Realencyclopädie d. ges. Heilk." Encyclop. Jahrb., v. Bd., 1895.

⁶ Edinburgh Hospital Reports, 1895.

been found at the operation a more careful study of the symptoms might have prevented mistakes.

2. The second class of cases are those in which a tumor was found at the operation, but its removal was impossible. This was usually due to the nature of the tumor. In any case the nature of the tumor is a matter of uncertainty. Should it turn out to be a glioma it is often very difficult of removal, yet Von Bramann has recorded¹ a case of glioma in which three operations have been performed, each a year after the preceding one, with a consequent prolongation of the patient's life, and, as already stated, it is not dangerous to make large incisions into the brain. Cases in which the removal has been impossible, however, are cases where the tumor has been very diffuse, very vascular, and very large. In all these cases it seems to me that an earlier attempt at operation might have succeeded. It is noticeable that while prior to 1893 five such cases are recorded, since 1893 but four such have been put on record, and this appears to show that with greater care in the selection of cases for operation, and an earlier adoption of this procedure, this class of cases will be eliminated in the future.

3. We come now, thirdly, to the class in which tumor was successfully diagnosticated, was found at the operation, and was removed. These now number 107, with 72 recoveries from the operation—a very satisfactory record when it is remembered that the first case in which operation was undertaken occurred in 1885. It is to be recollected that statistics show that out of 120 autopsies in a hospital, brain tumor is found in one case only, and I have already stated that only 7 per cent. of brain tumors are open to operation.² Hence this record shows that the operation is now being undertaken in almost all suitable cases, and it is also a satisfaction to find that in the cases more recently recorded the percentage of recoveries from the operation is greater, and the percentage of final recovery from all symptoms of disease is also greater. It has been an objection to the operation, that, even when tumors are removed they are liable to recur, and that the destruction of brain tissue produced before the removal renders the patient a helpless in-

¹ Archiv für klin. Chir., II., 1, 1895.

² Thacher reports that in 512 autopsies at the Presbyterian Hospital, from February 1, 1898, to January 10, 1896, there were four tumors of the brain and seven abscesses of the brain. In 4000 autopsies made by Beadles in one of the insane asylums in England there were 45 cases of tumors of the brain. In 6177 autopsies made by Beck in Heidelberg, tumors of the brain were found 50 times. In 13,411 cases in the Nervous Department of the Vanderbilt Clinic to date, brain tumor was diagnosticated 36 times.

valid under all circumstances. This statement, however, is erroneous; for sufficient time has now passed to warrant the assertion that many patients are alive whose tumors were taken out successfully four, five, or six years ago, and many other patients are now alive, free from all symptoms, from whose brains tumors have been removed. I cannot but feel that in the future the prognosis in such operations will be more favorable than it is at present, and that we have every reason to go on with this work of removal.

As we look over the history of the successful cases it is evident that the most favorable cases for operation are those in which the tumor has been situated in the motor region of the brain, producing first localized spasms and then localized paralysis, or in the speech area of the brain, or in the visual areas of the brain. In all these areas the local diagnosis is easy, accession to the cortex is easy, and removal of the tumor should not present many difficulties in the hands of a skilful surgeon.

In the following table will be found a list of the varieties of brain tumor operated upon during the past three years and the result :

TABLE II.—VARIETY OF TUMOR REMOVED AND RESULTS, 1893-1896.

	Recovered.	Died.
Sarcoma	10	5
Glioma	3	1
Glio-sarcoma	2	0
Cystic	3	5
Tubercular	3	3
Gumma	1	2
Fibroma	0	1
Angioma	1	0
Not stated	3	4
	<hr/> 26	<hr/> 21

It is evident that sarcoma is a tumor most frequently removed at the operation, and with the best prognosis. There appears to be little difficulty in removing cysts, but subsequent results are less favorable, for it is not sufficient to evacuate the cyst, which then refills, but its wall must be dissected out; and this can rarely be done without serious injury to the brain, which may be followed by hemorrhages or by the formation of an abscess. Thus in a case operated upon by Dr. McBurney for me in January, 1895, in which headache and attacks of spasms, beginning in the arm and

extending to the face, then to the body, and finally becoming general, were the chief symptoms, these symptoms having developed subsequently to a blow on the head, which had not produced any fracture, trephining over the arm area revealed the presence of a cyst containing about two drachms of clear fluid. The wall of this cyst was removed. Two days later a gradually increasing hemiplegia and mental dulness indicated the existence of compression which was found on investigation to be due to a hemorrhage that had occurred from a small vein of the pia subsequently to the operation. About eight ounces of blood clot were removed from the surface of the brain, with immediate subsidence of the mental dulness and of the hemiplegia. The patient then went on to recovery, and remained well for five months, when the spasms recurred. Investigation showed that another cyst had formed at the seat of the old one. This was evacuated, and the attempt was then made to secure its healing from the bottom by packing and an open dressing. This appeared to succeed, but at the end of six weeks, when only a very small sinus remained, the boy suddenly went into a condition of coma and died, and the autopsy showed a third cyst which had formed beneath the others, had invaded a large area of the brain, and had ruptured, causing death. The cases reported from Australia, of cysts that are evacuated, are largely of the hydatid variety, which we do not see in America. Many of these cases recover and do not recur.

In regard to glioma, it is to be stated that in order to remove the glioma extensive incision into the brain is necessary. This need not prevent the operation, however, as vessels can be tied, either before incision is made, by means of an aneurism needle carrying a ligature deep into the brain around the tumor, or subsequent to its excision, as such vessels appear. It is a remarkable fact that even when glioma recurs it can be excised a second time, or even a third time, as the cases of Von Bramann and Cleghorn prove. The probability of a return of a glioma after extirpation makes this fact important.

Tubercular tumors have been successfully removed from the brain, Krönlein having collected¹ fifteen such cases, in five of which permanent cure resulted. It must be admitted that this tumor is liable to recur, and hence the objection which Von Berg-

¹ Zur operativen Chirurgie im Hirngeschwulste," Beiträge zur klin. Chir., xv., 25, 1895.

mann has made to this operation may be thought to be warranted ; yet, on the other hand, there are several cases on record in which patients have lived three or more years after the removal of the tumor without any recurrence; therefore in any case in which it is evident that other organs beside the brain are not invaded by the tuberculous process operation must be considered justifiable. The question of operating for gummy tumors is also an open one. There is no question that many of these tumors can be absorbed by full antisymphilitic treatment. There are others, however, which appear to be so large as not to yield to medicines, and in these cases I do not think we should hesitate to operate, for in several cases already on record, after removal of the tumor antisymphilitic treatment, previously ineffectual, has resulted in complete recovery.

It is not my function to comment upon the surgical aspect of these cases, and yet my experience in brain surgery, now reaching over sixty cases of various kinds, leads me to urge the adoption of the flap operation rather than the operation of trephining, and also leads me to warn those who have not had experience from entering upon this field of surgery. I cannot but feel from the observation of many cases that it is essential to success that these operations should be done in a hospital, and should be done only by those who have had considerable practice in the performance of these operations, both upon the cadaver and upon the living subject. In this way delay is avoided; shock, which is the most dreaded feature, is obviated, and the many complicating accidents of hemorrhages, etc., are more skilfully met.

TABLE III. TUMORS SUCCESSFULLY REMOVED.—*Central Region*.—Verco, *Transactions of Australian Congress*, 1893. Cyst hydatid evacuated. Died.—Eskridge, *Journ. Amer. Med. Assoc.*, September 30, 1893. Sarcoma of fronto-parietal region, partly removed. Patient died.—Springthorp, *Australian Medical Journal*, October, 1893. Sarcoma removed, recovered. Glioma removed, died.—Chisholm, *Australian Medical Gazette*, 1893, p. 38. Hydatid cyst removed. Two cases, both died.—Harrison, *British Medical Journal*, December 23, 1893, p. 1368. Gumma removed, but patient died.—Parry and Davenport, *Australian Medical Gazette*, 1892, p. 315. Hydatid cyst evacuated. Death on twentieth day.—Pauly and Jaboulay, *Lyon Médical*, February 5, 1893. Cyst. Patient died four days later.—Cleghorn, *New Zealand Medical*, January, 1893. Recurrent glioma operated on four times

with temporary improvement.—Diller and Buchanan, *International Medical Magazine*, September, 1893. Cyst. Patient recovered and improved.—Brigatti e Albertoni, *Revisita sper. d. fren.*, 1893, p. 1. Glioma. Patient much improved thirteen months later.—Annandale, *Edinburgh Medical Journal*, April, 1894. Sarcoma. Patient recovered and was well three years later.—Vierordt and Czerny, *Fortschr. d. Med.*, 1894, No. 13, vol. xii., p. 193. Subcortical tubercular tumor in motor region. Patient recovered from first operation, at which nothing was found, and from second operation one year later, at which tumor was removed; at end of one and a half years after removal of tumor patient was much improved.—Rossolimo, *Deut. Zeitschr. f. Nerv.*, vol. vi., No. 1. Cyst evacuated. Patient improved; living two months later.—Sweeney and Ancker, *Northwest Lancet*, July 15, 1894. Cyst evacuated. Patient recovered entirely.—Pel, *Gazette des Hôpitaux*, January, 1895. *Berlin klinische Wochenschrift*, January 29, 1894. Fibroid tumor removed. Patient died.—Steele, *Journ. of the Amer. Med Assoc.*, January 27, 1894. Sarcoma. One year later patient had recovered entirely.—Dana, *Journal Mental and Nervous Disease*, June, 1895. Sarcoma partly removed. Patient improved at end of one year.—Wood and White, *University Medical Magazine*, January, 1895. Subcortical glioma of arm area. Patient recovered.—Nixon, *Transactions of the Academy of Medicine of Ireland*, vol. xii., 1895. Gumma. Patient died one month later from hemorrhage.—Murray and Richardson, *Lancet*, March 16, 1895. Sarcoma. Patient recovered and was well nine months later. Riegner, *Deut. med. Woch.*, 1894, No. 23. Sarcoma removed, but symptoms remained some months later.—Grasser, *Deut. med. Zeit.*, 1895, No. 34. Cysto-sarcoma of the left motor area only partially removed without relief of the symptoms. Patient died four weeks later.—Gaykiewicz, *Neurolog. Centralbl.*, 1895, p. 181. Gumma. Patient recovered entirely.—Bremer and Carson, *American Journal of the Medical Sciences*, February, 1895. Sarcoma. Removed in part. Patient died on seventeenth day.—Bruns, *Neurolog. Centralbl.*, 1895, p. 125. Sarcoma. Patient died of septic meningitis.—Beavor and Balance, *British Medical Journal*, January 5, 1895. Sarcoma of the centrum ovale under motor region operated and largely removed, July 1, 1894. In November the patient was alive and improved.—Gibson, *Lancet*, December 14, 1895. Glioma-sarcoma, recovery.—Horsley,

Clinical Journal, February 13, 1895. Tumor. Recovery six months later.—Roth, *Berlin. klinische Wochenschrift*, 1895, No. 41. Tumor. Patient recovered entirely.—Kronlein, *Beiträge zur klinischen Chirurgie*, xv., 251, December, 1895. Tubercular tumor. Patient recovered entirely.—Mya e Cadevella, *Il Policlinico*, March, 1894. Cyst removed. Complete recovery. Delorme et Schwartz, *Bul. d. l. Soc. d. Chir.*, Paris, April, 1895. Tumor removed. Patient improved.

Temporal Region.—Nicholaysen, *Annals of Surgery*, July, 1893. Sarcoma, temporal region. Recovery.

Parietal Region.—Colquhoun, *New Zealand Medical Journal*, July, 1890. Sarcoma, parietal region. Patient recovered from operation.—Rose, *Medical Press and Circular*, February 14, 1894. Sarcoma, parietal area, only partially removed. Patient died.—Starr and McCosh, *American Journal of the Medical Sciences*, November, 1894. Angioma, parietal area, removed. Patient recovered entirely. Is now well.

Occipital Region.—Rodgers, *Medical Times and Register*, 1888, ii., 343. Glio-sarcoma, occipital region, removed. Patient recovered, but symptoms remained.

Region not Stated.—Esteves, *Buenos Ayres Semaine Medical*, May 17, 1894. Cyst removed. Patient recovered.—Horsley, *British Medical Journal*, December 23, 1893. Tubercular tumor, found, removed. Patient lived two years. No return of brain symptoms.

Cerebellum.—Macewen, *British Medical Journal*, December 23, 1893. Three tuberculous tumors of cerebellum. Patients were much improved, but tumors recurred and caused death after some months.—Parry, R. H., *Glasgow Medical Journal*, July, 1893. Tumor of cerebellum partly removed. Child died.—Hermanidas, *Neurologisches Centralblatt*, 1895, p. 181. Tumor of cerebellum removed. Patient improved. Two tumors of the cerebellum found and removed. Patients both died.—Stewart and Annandale, *Edinburgh Hospital Reports*, 1895. Sarcoma, right cerebellar lobe. Patients much improved two months later.—Munn, *International Journal of Surgery*, February, 1895. Tumor of the cerebellum found but not entirely removed. Patient died the next day.

TABLE IV. TUMORS TREPHINED FOR, FOUND, BUT NOT REMOVED. *Central Region*.—Horsley, *British Medical Journal*, December 23, 1893. Fibroma, motor zone, too large for removal.

Death.—Bruzeliuss and Berg, *Centralbl. für Nerven*, 1895, p. 529. Glioma of the central convolutions. Not removed. Patient died two months later.—Nicholson, *British Medical Journal*, December 23, 1839. Sarcoma of motor area, could not be removed and patient died.—Starr and McBurney. Glioma of central area too extensive and vascular for removal. Patient died ten days after operation.

TABLE V. TUMORS TREPHINED FOR BUT NOT FOUND.
Frontal Region.—Chipault, *Revue Neurologique*, 1893, p. 149. Glioma, frontal subcortical. Not found at operation. Died.—Fagnet and Lannelongue, *Mercredi Méd.*, 1895, No. 12. Right second frontal convolutions, subcortical gumma, trephined over motor region, died within a few days of operation.—Aldibert, *Revue de Chir.*, 1895, No. 2. Tumor of the first and second frontal convolutions. Trephining done over Rolandic region. Death three months after the operation.—Hermanidas, *Neurolog. Centralbl.*, 1895, p. 181. Tumor of the second frontal convolution supposed to be cerebellar. Patient died soon after the operation.

Parietal Region.—Walton and Richardson, *American Journal of the Medical Sciences*, December 18, 1893. Aphasia. Tumor located in left parietal region, not found at operation. Patient lived two months. Some relief of general symptoms for two weeks. At autopsy sarcoma at junction of parietal and occipital areas.—Horsley, *British Medical Journal*, December 23, 1893. Tumor not found, but trephining in parietal region relieved symptoms. Died two years later; no tumor found at autopsy.—Gibson, *Lancet*, December 14, 1895. Glioma of corpus striata, not found. Died.—Schlesinger, *Neurolog. Centralbl.*, 1895, p. 702. Trephined over the motor region. No tumor found. Patient living two months after the operation.—Sanger, *Neurolog. Centralbl.*, 1895, No. 10. Tumor of the inferior parietal lobule, trephining over motor region. Patient died seven months after operation.—Starr and McBurney, sarcoma of centrum ovale under motor area. Patient died ten days after operation.

Region not Stated.—Keen, *American Journal of the Medical Sciences*, January, February, 1894. Occipital tumor, not found. Patient died four months later. Glioma of third ventricle, not found. Patient died nine hours after operation. Tubercular tumor, motor area, not found. Patient died seven months later.

III. DISCUSSION ON THE PRESENT STATUS OF THE SURGERY OF THE BRAIN.

3. CRANIOTOMY FOR IDIOCY AND IMBECILITY.

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THE subject assigned to me in this discussion is that of the Value of Craniotomy and its Indications in Conditions of Idiocy and Imbecility. I undertook to say something upon this subject for the reason that I had a year ago begun to collect and study my own personal experiences in the matter. Last spring I put these into the form of an article, which appeared in the *American Journal of the Medical Sciences*, for January, 1896. This article, though written nearly nine months ago, still embodies essentially my views on this subject. In it I collected a list of 70 cases, excluding Lannelongue's, and made an analysis of them. I found that there were 29 improved, 19 not improved, and 22 deaths. Leaving out many of the old cases, which did not represent truly the present surgical results, I found that out of 22 selected cases there were 6 improved, 10 non-improved, and 6 deaths. These figures conform to my own personal experience in 14 cases, for among these there were 3 improved, 8 not improved, and 3 deaths. Since the writing of my article I have collected a number of other cases, 11 in all, making a total of 81. They are the following :

1. Boy, congenital idiot, microcephalus, age ? Five operations were done, but there was no improvement. The absence of statements about age and other details makes the case of little value.—Shuttleworth, *Brit. Med. Journ.*, 1895.

2. Child, syphilitic imbecility. Operation, much improved. Reported at a meeting of the British Medical Association, July, 1895. I cannot find the detailed report.—*Ibid.*

3. Boy, aged six months, microcephalus. Operation was done but no improvement followed.—T. Ulmanns, *Verhand. der deutsch. Gesselsch. f. Chirurg.*, xxiii. Congress, 1894.

4. Girl, aged eight and one-half weeks. Operation, death.—T. Ulmanns, *loc. cit.*

5. Boy, aged four and a half years, microcephalic idiot, epilepsy. Two operations were made, followed by marked improvement five months later.—C. Parkhill, Denver, Colorado.

6. Girl, aged five and three-quarter years, megalcephalic idiot, thick skull. Improvement followed the operation, reported a few weeks later.—*Ibid.*

7. Girl, aged four years, acquired imbecility from meningitis when eight months old. Operation was followed by death.—J. F. Binnie, Kansas City.

8. Boy, aged twelve years, congenital idiocy. He had had fits and could not walk, but was not microcephalic. Two operations were done, and improvement followed.—*Ibid.*

9. Boy, aged fourteen years, imbecile, moral perversion, no paralysis or epilepsy. Operation was followed by great moral and some mental and physical improvement, which set in six weeks later; present at end of year.—A. Spanock, *Neurol. Centralblatt*, 1895, p. 802.

10. Similar case, but improvement followed trephining.—Wiegand, quoted in *Krafft-Ebing's Psychiatrie*.

11. Child, aged eight years, idiot. Operation was done, but no improvement followed.—R. J. Hall, *Amer. Journ. of the Medical Sciences*, December, 1895.

Among the foregoing 11 cases there were 6 improved, 3 not improved, and 2 deaths. The statistics for the 81 cases are, therefore, improved, 35; not improved, 22; deaths, 24.

This gives a much larger percentage of improvements than I believe really exists, nevertheless there is testimony from all parts of the world that a small percentage of idiots operated upon are benefited. Assuming this fact to be established, there are several questions that at once arise :

1. What class of cases is it that are thus benefited ?
2. How much are they benefited, and in what direction ?
3. What is the kind of operation which secures the benefit ?
4. What are the dangers of the operation ? for this latter fact is always to be considered in presenting the case to the parents.
5. Finally, how does the operation act ?

In answer to the first question, as to the class of cases most benefited, it seems to me that there are two kinds of idiots and imbeciles whom we may subject to the operation with some expectation of getting help. One of them is the congenital idiots—children

whose defect is due to some disturbance in the evolution of the brain before birth, and not to any accident, such as hemorrhage or embolism or trauma or inflammation after birth. This class have, as a rule, small heads. They are not, however, always microcephalic cases. Their heads measure, on the average, one to two centimetres less than that of the normal child. Thus, the great circumference at two years, which is, normally, about forty-seven and a half centimetres, in these genitous idiots is forty-six centimetres. Congenital idiots in whom the mental defect is associated with a double paraplegia, as well as cases of cerebral diplegia or birth-palsy, are not, in my experience, benefited, though my friend, Dr. Conway, states that he has seen one such case. The cases of idiocy associated with hemiplegia and epilepsy in children are not good subjects for the operation. When, however, epilepsy is associated with a congenital idiocy, it is not a contraindication.

The second class of cases in which benefit is occasionally reported is one in which there is perhaps a less marked mental defect, in which the patients are imbeciles rather than idiots; in which also there is no great amount of bodily defect, the patients being able to walk, and, to some extent, help themselves. When such patients present striking moral defects, such as destructiveness, precocious sexual habits, sudden obsessions, and, in general, are irritable, restless, and difficult to train and manage, improvement has been reported after surgical operation.

The age at which the operation should be begun in the case of patients of the first class, that is, genitous idiots and microcephalic children, should not be above four years, but in the moral imbeciles the operation is effective as late as the period of puberty.

The second point of interest is as to how much such children are benefited. In all cases the improvement is never a cure; the patients are simply made more tractable, learn to speak better, to walk more perfectly, to swallow and take their food better, and, in general, they take a new start in mental and physical development. Idiots who were before unteachable, noisy, helpless, become capable of learning a little, of minding the directions given them, and of being more cleanly and manageable.

As regards the epilepsies, there is for a time, at least, a diminution of the fits, and sometimes they cease for a long period, but I am not aware of any positive evidence that the operation causes the epilepsies to abate entirely. We know that in some of these cases

of epilepsy associated with idiocy, the convulsive attacks cease of their own accord.

As to the effect upon the moral imbeciles, the operation does not develop, to any brilliant extent, the elemental virtues. But it seems to make some more tractable, lessening the violence of their morbid impulses.

In this connection I should like to add the interesting fact communicated to me by one of the physicians to the Clinton Penitentiary, that deep incisions through the scalp and periosteum have been found to produce a decided moral improvement in some criminal cases.

As to the kind of operation which it is best to perform. In my own experience, the linear craniotomy, with lateral branches, has always been done, and that is the operation that has been performed by most others. Various modifications, such as cutting out large circular pieces from certain parts of the skull, and making the circular furrow around the top of the head, have been suggested, but I do not know of any special advantage that can be derived from them. As to the technical part of the operation I have nothing to say, except that the groove made in the skull should be a wide one and the removal of the bone should be liberally done. Furthermore, a second operation a few weeks or months after the first is often advisable. There seems to be no doubt that the results of the operation do not always appear in the first few months, but that after that time an improvement in the symptoms sets in.

As to the dangers of the operation, they have been rendered practically *nil* through the perfection in its technique, and I believe that special credit is due to Dr. Powell, whose methods have been so eminently successful in his work at the Post-Graduate Hospital. I do not know of any surgeon who has had such a small mortality rate. But with the instruments that he uses, and with the technique that he has devised, I see no reason why everyone should not get the same results. So that, so far as the element of danger is concerned, it can be practically eliminated.

I want, in conclusion, to add, one word as to the theory regarding its efficacy. The operation was originally devised on the theory that by cutting open the skull of a microcephalic child, it gave an opportunity for the compressed brain to grow. This theory, which was never substantiated by any facts, and never held by any experi-

enced neurologists, has been, of course, overthrown, though, to me, it has always seemed like overthrowing a man of straw. It is perfectly true that cutting open the skull does not remove any pressure or allow a hitherto confined cerebrum to expand; it does not in any measure change the condition of the brain which has been destroyed by cysts, apoplexies, and sclerosis. What the operation does is this: It has a profoundly disciplinary effect upon the idiot. As I have said in my previous paper: These creatures are often not to be affected at all by ordinary educational methods; neither rewards nor punishments stimulate their effort or excite their attention. They cry, scream, and throw themselves about without the slightest reference to anything that is said to them or done for them. The parents, as a rule, abandon themselves to despair and yield all their attention simply to gratifying the morbid displays of the imbecile child. I have known a mother to carry an idiot child about on her arm the whole day, only putting it down for a short interval for her meals, or while the child was sleeping. This she kept up for more than a year, and at the same time did her housework, cooked, and arranged her table, and looked after all the requirements of the home. As soon as the child was placed on the floor or in its crib, it inevitably set up a horrible and persistent screaming, which no amount of severe words or rigorous punishment would affect. In other cases the idiots or imbeciles which are found in institutions suffer, perhaps, from too much discipline and not enough personal attention and the lifting influence of bright and healthy children about him or her.

The operation of craniotomy upon children in institutions attracts the attention of nurses and of the medical officers, and the children get more care and more stimulating words and help in various directions. I would repeat, therefore, that it is, in my opinion, largely through its pedagogic influence that an improvement in these cases takes place, and that the operation is allied in its effect to a severe piece of castigation. In the very low types of criminals it is a well-recognized fact by philanthropists that discipline and systematic work can only be obtained by actual corporeal punishment in many instances, for nothing else seems actually to appeal to them. In the very lowest grades of intelligence, such as we find in idiots and imbeciles, it is probable that only these very powerful inhibitory influences, such as accompany the performance of a capital operation, can affect materially the intellect of the child. It is through

some such explanation as this that I would explain the fact that an operation is necessary on these children.

To quote, further, the conclusion to which I arrived in my previous paper :

“ The method by which improvement is brought about is largely a surgico-pedagogic one. All those who have had experience in educating idiots lay stress on the importance of special pedagogics, and craniotomy belongs, in a measure, to this class of therapeutic procedure. It may have some additional value by stimulating the circulation and nutritional activity of the brain.”

This view of craniotomy for idiocy and imbecility lends itself readily to humor, and those who wish may interpret me as intending to kill the operation by ridicule.

The moral effect of surgery upon patients, however, is a most important one, and I think is sometimes quite sufficient to justify even a serious operation. Dr. White has shown this most clearly in his very valuable article on the “ Effect of Surgical Operations *Per Se*.” It makes no difference how we do it. If in one case out of four or five we succeed in making these wretched ones a little more intelligent, and render their care a little less of a burden to their parents, I think that we may well consider that we are justified even if we only play the *rôle* of pedagogue.

IV. DISCUSSION ON THE PRESENT STATUS OF THE SURGERY OF THE BRAIN.

4. THE SURGICAL TREATMENT OF EPILEPSY.

BY B. SACHS, M.D.,
NEW YORK.

By common consent the surgical treatment of epilepsy has been restricted to localized or Jacksonian epilepsy, and more particularly to those forms due to traumatic injury of the skull, of the brain, or of both. In keeping with modern theories regarding the localization of function in the cortex, a partial epilepsy is considered to be the direct result of irritation of one or more of the cortical centres, the part first convulsed in an epileptic seizure pointing to

the chief site of the disturbance. From this focus of irritation the changes giving rise to convulsive seizures were supposed to emanate. It was natural, therefore, to infer that by removing the cause of local irritation—say, a depressed bone, or a clot of blood pressing upon a small area of the cortex, that we should be able to do away with the actual cause of the disease, to check the tendency to epileptic seizures, and thus to cure the trouble. If the disease had actually invaded or destroyed a part of the cortical tissue it was supposed that the removal or excision of this diseased area would prevent further trouble. But the expectations that have been based upon physiological reasoning have not in any sense been realized. The conviction has steadily been gaining ground that if surgical treatment in epilepsy was to be a success it would have to be restricted to a very limited and well-defined set of cases. The ardor displayed but a few years ago in the surgical treatment of epilepsy was due in part to the hopes based upon every new and bold procedure, but above all, to the fact that successes were recorded in different parts of the world; but the fewest surgeons or neurologists had waited long enough after operation to make certain that the temporary improvement was equivalent to a lasting cure. A number of us in New York can claim the credit of having first determined upon the plan of recording not only the successful cases, but the actual result in every one of a series of cases operated upon. With the adoption of this procedure it was very soon evident that former successes had been overestimated.

I have a great horror of mere statistical inquiries. A single case well observed brings more conviction to my mind than a report of a hundred others which are imperfectly recorded and imperfectly observed, and in the study of this special subject statistics are absolutely worthless. It is far better to consider the experiences of those whom we know to be careful observers. It is significant in this connection that three German writers—Bergmann, Eulenburg, and Jolly—taking little note, however, of the publications of New York physicians, have come to the conclusion that the surgical treatment of epilepsy promises but little. Gowers and Horsley seem to be somewhat more hopeful. The French authors are adopting a conservative course, and American surgeons and neurologists are gradually approaching the point of advising operation only in well-defined cases. Without giving accurate figures, I am satisfied from my knowledge of what is going on in

the New York Hospitals, that not one-third as many cases of epilepsy were operated upon in the year 1895 as in each one of the four preceding years.

There is danger of passing from one extreme to the other, and the failure to apply surgical relief under conditions in which a cure would be possible would be as reprehensible as the performance of operations simply for the sake of satisfying personal ambition, or performing mere physiological experiments upon the human subject. In spite of all disappointments, it is well to weigh the matter calmly, and it is my belief that there are some, but only relatively few, cases of epilepsy in which relief may be expected from surgical interference. Let me state briefly what the difficulties are and in what direction we should look for success in the future.

First, epilepsy, and even partial epilepsy, is not the strictly localized disease that it has long been supposed to be. While a definite area may be the starting point of the entire affection, after such a lesion has existed for a short period of time considerable changes are wrought throughout a great part of the hemispheres, and even if we remove the original diseased area other parts of the cortex may have the power of generating epileptic seizures. Some years ago, in an article published in the *New York Medical Journal*, I argued that these secondary changes were established in the course of a year or two years, and that unless the initial focus of disease was removed long before that period of time, the cure or the prevention of epilepsy could not reasonably be expected. This argument has been fully borne out by my own later experiences and by the publications of others. Moreover, cases have been reported in which partial epilepsies have occurred and the actual disease was found a long distance from the motor areas. Nor is it surprising that a number of authors who have studied their cases carefully have recorded improvement following upon the operation for epilepsy, with a return of the epileptic attacks after the lapse of a year or more. The improvement which follows upon surgical operations has been attributed to a variety of causes. It is supposed by some, as, for instance, by White, of Philadelphia, that the operation *per se* has a decidedly beneficial effect, as almost every operation upon epileptics has. The temporary improvement following upon any surgical treatment in epileptics has often been noted, and even surgical operations of such a character as to preclude the possibility of the removal of a reflex cause of the epilepsy. It is unquestion-

ably the more careful life that such patients lead at the time following an operation, the great attention that is paid to them in the family and in the hospital in the period following an operation, as Dana has recently suggested for another line of cases, that are largely responsible for this temporary improvement. But it is not well to account in this way for the improvement in all such cases, and I wish to reiterate what I claimed some time ago, that, considering the frequency of traumatic cysts and of old adhesions, release of pressure by trephining is a factor not to be neglected.

The second difficulty encountered in the treatment of epilepsy is due to the fact that the cases do not reach us, as a rule, until long after the initial injury. The secondary changes to which I refer are fully established by this time, and the removal of the initial lesion is not, therefore, sufficient to effect a cure of the disease. These secondary changes are not hypothetical, but have been established by the researches of Chaslin, and more recently have been shown by Muratow, to exist in the brain of a patient who had had a focal injury upon which a chronic epilepsy followed. These secondary changes involve the association fibres mainly, and, as these are intimately interwoven throughout the entire hemispheres, it will be seen that almost any part of the hemispheres may become an epileptogenic area.

Thirdly, while the motor area is in the large proportion of cases the seat of the initial injury, other parts of the brain, particularly those intrusted with the representation of the special senses, may be the primary seat of the disease, and if so, excision of such sensory centres is hardly to be considered. After excision of a portion of the motor areas paralysis of the limb governed by this centre may follow. Such paralysis is, on the whole, to be tolerated if the procedure which may cause the paralysis will also secure the relief of the epilepsy. Moreover, such palsies following upon the excision of a motor centre are often recovered from to an appreciable extent; but if the visual centre in the occipital lobe be the seat of the primary disease, few physicians would have the hardihood to attempt an excision which would be followed by serious impairment of the visual sense. It is evident, therefore, that the surgeon and the neurologist are handicapped in many ways by the complicated structure of the hemispheres. The inference from all this is that surgical interference, whether it be mere trephining, or the excision of cortical tissue, is justifiable only in the earliest periods after a

traumatic injury, before secondary degeneration is established, and I would, above all, urge the importance of treating by the best surgical means those cases in which the skull or the brain has sustained serious injury, and before the epilepsy has become manifest, for in many cases the secondary changes have been so firmly established by the time the first epileptic seizures occur that relief can hardly be expected from surgical means. I may repeat another dictum of a few years ago, "that the only way to cure epilepsy is to prevent it." Inasmuch as the trephining operation, if conducted with due regard to modern principles, is not a dangerous one, I would particularly urge such operation in cases of traumatic injury to the skull, even if at the time of the injury the development of an epilepsy is still a contingency of the distant future. The further caution is in order that, even if no injury can be felt through the scalp, or, if on cutting through the scalp the outer table is found intact, that it is well to do the trephining, if the general symptoms point to serious brain injury, for in several instances in which I have had operations done the outer table appeared entirely normal, and yet on trephining we found either a spicule of bone that had been driven into the brain, or a considerable exostosis that had been developed from the inner table and had pressed upon the cortex. In one instance, still fresh in my mind, while the external appearances were entirely normal, after removing a large button of bone, it was discovered that the internal exostosis had produced a duplication of the brain at the site of injury.

These surgical procedures are applicable not only in those cases of partial epilepsy due to external injury, but to another form of Jacksonian epilepsy associated with cerebral disease early in life. I refer particularly to the cases of meningeal hemorrhage at birth, and to the cerebral lesions, hemorrhage or softening, occurring in the first two or three years of life. These lesions are followed by spastic palsies, either hemiplegic or diplegic in character, associated with epileptic seizures. The morbid process in these cases is very apt to lead to the formation of cysts and scars; the removal of these at a tolerably early period after the onset of the disease has been productive of good in some instances. I have the records of four such patients who, in connection with an infantile cerebral palsy, had also developed epilepsy. The removal of a large area of bone, releasing pressure over the cystic area, the excision of an old scar due to hemorrhage, or the breaking up of old adhesions between

the pia and the cortex, have been followed by a decided diminution in the number of epileptic attacks, and in one case by the relief of epilepsy for a period of at least one year. These cases offer the possibility of relief by surgical procedures, and for this reason should be carefully considered both by the surgeon and the neurologist. In weighing the probability of relief, if not of cure, the duration of the epilepsy after the initial lesion and the condition of mental development will be important guides in determining upon the advisability of an operation. It should also be borne in mind that very young children do not tolerate operations upon the skull nearly as well as older children and adults, and this fact seriously limits the number of cases of cerebral birth palsies associated with epilepsy in which the operation would seem advisable. Gloomy as the prospect may be, I would still urge the careful analysis of the symptoms in each case, either of traumatic epilepsy or of early infantile palsy, and if the symptoms of the epileptic seizure indicate or point to the fact that the cortical disease is still a limited one, the possibility of relief seems to me to justify the attempt at surgical interference. It is only through a careful analysis of all such cases that we shall finally be able to state with some degree of confidence which cases may be benefited by operation and those in which operation is entirely useless. Indiscriminate surgical interference is to be condemned.

V. DISCUSSION ON THE PRESENT STATUS OF THE SURGERY OF THE BRAIN.

5. BRAIN SURGERY IN EPILEPSY.

BY GEORGE WOOLSEY, M.D.,
NEW YORK.

I WILL limit my remarks in the discussion of brain surgery to those cases where epilepsy is the only or the principal condition for which an operation is undertaken.

Most of the cases of epilepsy on which I have operated were of traumatic origin or had a history of traumatism. In two cases the epilepsy was associated with imbecility from childhood, together

with a paretic, contracted, and atrophied upper extremity, which in one case presented athetoid movements.

Besides these two cases of epilepsy associated with imbecility and paresis, I will refer here to six cases of traumatic epilepsy which have come under my care during the past three or four years. All but one of these cases I have operated on at Bellevue Hospital, and in most of them I have had the benefit of the advice and assistance of Dr. E. D. Fisher. One of these cases is referred to in Dr. Starr's *Brain Surgery*, another was published in the *New York Medical Record* of June 22, 1895, but the others have not been published.

On analysis of the six traumatic cases we find briefly : 1. That in four out of the six cases the injury was severe enough to produce fracture, and in all unconsciousness. 2. That the epileptic attacks commenced at periods varying from a few months to seven and a half years after the injury. 3. That in the majority of cases the convulsions became more severe and frequent in spite of medical treatment, although in two of the cases the convulsions became temporarily less frequent and severe and even ceased altogether for a time, only to recur again later. 4. That the convulsions began with a well-marked motor aura in one hand in four cases; in the other two cases the operation was located by the site of the injury. 5. That in all cases the epileptiform seizures were severe enough to produce unconsciousness. 6. That the mental condition was becoming weak: in some the memory was failing, and in some great irritability of temper had developed. 7. That on examination the scar of previous operation or operations was present in four cases, a tender cicatrix in another case, and in only one case was there evidence of the former injury. 8. That all kinds of medical treatment were tried in each case for a considerable length of time, not only without success, but with a progressive decline in the general and mental condition.

As to what was found on operation : 1. The skull in four cases presented the opening or openings of a previous operation: in one case it was locally thickened, and in one case presented a superficial scar of great density. 2. The *dura* was very firmly adherent to the scalp opposite the openings in the skull. It was much thickened in two cases, one of which presented no complete fracture of the skull, in one case it was pierced by a spicule of bone from the inner table of the skull, and in only one case did it appear normal.

3. As to the *pia* and *brain*, there were adhesions between the dura and pia in two cases, in one case there was a large cyst of the brain connected with the lateral ventricle, in another there was a small cyst on the brain-surface beneath and around a spicule of bone; in one case the brain seemed to be under considerable pressure, and in only one case did it appear absolutely normal. 4. After the operation there were often one or several convulsions within the first few days, due apparently to the irritation caused by the operation.

As to the two cases where imbecility was associated with epilepsy, both commenced in childhood, following in one case one of the diseases of childhood. Both commenced with general convulsions, followed by hemiplegia. In both there was partial recovery of function of the lower extremity, while the upper remained atrophied, contracted, and paretic. In one case there were athetoid movements in the upper extremity, in the other the right upper extremity was affected; speech was an effort. Notwithstanding medical treatment of all kinds, the convulsions increased in number and severity and varied from one to two a day early in the first case, to twenty to thirty a day in the second case. Their mental condition was weak and imbecile, and one case was very religious. On operation, the skull was found enormously thickened in one case, varying between three-quarters and one inch in thickness, and the brain beneath it was parencephalic. In this case there was some improvement as long as the cyst was drained, relieving the intracranial pressure, indicated by the weak pulsation of the brain and its hard, board-like feeling on pressure; but he left the hospital little or no better than he entered it. This case had several convulsions soon after operation; but the second case, in which a portion of the cortex was removed for the athetoid movements, had no convulsions as long as the resulting paralysis lasted. When, after one month, motion returned in the area paralyzed, the athetoid movements recurred and soon after the epileptiform convulsions again recurred, but they were mild in character and much less frequent.

Looking at the results of these eight operations it must be admitted that they are not very favorable or encouraging.

One case with typical Jacksonian epilepsy in which a large cyst, connected with the lateral ventricles and reaching the surface in the frontal region, was drained, died thirty-six hours after operation, with very high temperature. There were no visible evidences

of infection, and the question arises as to whether the pyrexia could be due to a disturbance of the heat centre from the change in intracranial pressure following the drainage of the cyst. Not very long before Dr. Abbe reported a similar case. One other case died within a week after the operation, although he made a fair recovery and ran an aseptic course. The operation was responsible for this result, apparently only on account of the hemorrhage, which was by no means excessive, but the loss of blood was badly borne. The mortality in these eight cases is unduly high, but the total number is too small to compute it on; an equal or greater number might readily follow these eight cases without another fatal result.

Of the other cases two were not improved at all; one was improved as long as he was kept track of, three or four months; one was markedly improved temporarily, and still shows (two months after the operation) a less decided improvement. Another case has been operated on too recently to judge of the result, and only one case may be strictly said to be cured.

Yet in judging of the results it is only fair to remember how helpless these cases were. In every one medical treatment had been thoroughly tried and failed, and in each case the mind was becoming affected, and the necessity of an asylum was only a question of time. Three of the six traumatic cases had already been operated upon for the epilepsy without benefit. And as the case which may be considered cured belonged to this latter class, it may justly be wondered at that the results were so good.

The case in which a cure resulted was that of a boy, aged fifteen years, who, having received a severe fracture of the skull nine years before, had had for one year and a half general epileptiform seizures which had increased in number and severity. His memory had become so poor that he had to be taken from school, his temper was becoming ungovernable, and he was decidedly stupid. He had already been operated on by trephining, with only temporary benefit. Directly after the operation, three years ago, he had a number of convulsions, and after that only on two or three occasions for six months. He was very noticeably brighter, and his memory and temper were very much better. He is now an elevator boy earning his living, and has had no convulsions for from one to one and a half years, and has taken no medicine during that time. It is too early to judge of the second case of epilepsy with imbecility and paresis, although it is noticeable that although before

operation he was very unmanageable, yet now he gives no trouble. Before operation his attacks averaged from twenty to thirty a day, and were not controlled by bromides; now they may number one to three a day, and he often goes one to three days without having any.

The statistics are undoubtedly strongly against the operation. Many cases already reported as cured or much improved have relapsed, leaving almost none to encourage us to continue operating in such cases. But if we have one such result as that above described among six or even sixty otherwise hopeless cases, are we not only justified, but morally bound to give these unfortunate patients the chance, however slim, of a cure or even an improvement? Improvement short of a cure, especially if it be permanent, is more than we can promise them in any other way. It may be said that the cases should be more carefully selected, but it seems to me that cases like the above, which are otherwise hopeless and have the history and signs of an injury or a localized aura at the outset of a convulsion, justify and call for an attempt to cure by operation. A fatal result of an operation is no worse than their outlook otherwise is. We therefore continue to operate.

This being our position, let us turn to the technique of the operation in which many radical changes have been made, many details of which are of interest and importance. In three of the eight cases to which I have referred I used the trephine, but in all other cases during the past three years I have used the bone-flap method, in which the scalp, pericranium, and bone together form the flap.

According to my own observation hemorrhage forms a principal element of shock even in these operations on the skull. This was impressed upon me by one of the two cases which terminated fatally. Therefore, I have for some time made a regular practice of placing a line of interrupted stout silk sutures, through the scalp and overlapping one another, just below the base of the flap before commencing the incision. This materially lessens the hemorrhage and thereby the shock, and, if necessary or advisable, it might be carried around the proposed flap at a little distance. The sutures are, of course, removed after the flap incision is sutured. The base of the horseshoe flap is naturally turned downward toward the blood-supply, and its ends are nearer together than its greatest breadth. The size may vary according to requirements. I have made them as large as two and one-half by three and one-half

inches, and they may be larger. After incision of the periosteum of the shape and size of the flap of the scalp, which may have slightly retracted, it is turned back for one-quarter of an inch and the chisels applied. For this purpose I have found nothing better than the V-shaped wood-carver's chisel, such as I show you. I have used the Hartley chisels as well, but find them no better, if as good, to my own taste. One point should be emphasized as to the sharpening of the chisels, and that is that they should be ground on their upper surface within the groove and not on the outside. This was illustrated in the case reported cured, where the chisels, ground as usual externally, had to be held more vertically in order to cut, and such an amount of the force of the mallet blows acted as a direct blow on the skull that the patient suffered from well-marked concussion for three or four days after the operation.

The question has been raised as to which is the better instrument for cutting these bone flaps, the chisel or the saw? The chisel has been objected to on account of the fear that the mallet blows would cause shock. If the chisels are properly ground, as I have indicated, or the Hartley chisel used, I think this fear is groundless. Very little force is required in blows of the mallet, and in my own experience I have never observed intermission of the pulse or marked shock resulting from the blows. There is, sometimes, quite free bleeding from the diploë, and this rather than the blows of the mallet may be responsible for the slight shock sometimes observed. I have yet to see the saw that in the adult skull will work better or even as well as the chisel. To my mind, cutting by the saw is more blind than by the chisel, unless the skull is first trephined in two or more places, and I can cut the bone flaps as rapidly as I can make two openings with the trephine. I have cut one bone flap two and one-half by three and one-quarter inches where the skull was three-quarters to one inch in thickness, in a comparatively short time. One point needs to be emphasized in these bone-flap operations by means of the chisel, namely, that the inner table should cut through at both ends of the incision at either side of where we are to break the hinge. If this is done the hinge breaks smoothly across, otherwise raggedly. Except at these two points it is not necessary to chisel through the inner table save at the middle of the flap, where we wish to insert the elevator to raise it. This has been proved by experience in operations and on the

cadaver. Of course, if desired, the inner table *may* be divided throughout, but it *must* be divided at the points indicated. Dividing the dura about one-third of an inch from the edge of the part exposed allows us room for suturing later. In two cases Dr. Fisher has verified the exposure of the required part by a weak electric current passed between two electrodes separated by about one-fourth of an inch. In the last case in which this was done I removed an inch square of the cortex containing the motor centre of the wrist and hand in which there were athetoid movements. Horsley practised a similar excision of the cortex for the same purpose in an operation witnessed by Dr. Starr last summer. In Horsley's cases as well as my own, the resulting paralysis was only temporary, the neighboring parts of the brain assuming the functions of the part removed. In my case motion began to return to the paralyzed part in thirty-two days. With the recovery of motion the athetoid movements began again, and a week later the first convulsion occurred. These have recurred at the rate of one to three a day, but one to three days often intervene without any convulsion, and they have been milder in character. I cannot see the advantage of cutting out a cortical scar, for it would only mean that another and probably larger scar would take its place and cause as much or more irritation than the first scar, and the patient would not gain thereby except for a brief interval. Furthermore, I do not think any good results from breaking up adhesions between the dura and pia, for these rapidly reform unless some foreign substance is placed between, which may very probably be quite as irritating as the adhesions. There are, therefore, natural limitations in brain surgery in spite of the most ingenious devices. I do believe, however, that a cortical scar is better than unhealthy irritable brain tissue.

In a similar case with athetoid movements, on which, or on the cause of which, the convulsions depend, as in this case, I would advise the removal of a larger area of cortex with the hope that the function, or at least the athetosis, would not return, for the limb in this case was paretic, atrophied, contracted, and generally useless.

In removing the area of cortex I ligated the three or four vessels of the pia which supplied it, passing the ligature with a curved needle, and then the excision of the cortex was almost bloodless.

In two or three cases in which the dura was very much thick-

ened I have excised it without producing either a good or a bad result, and I do not believe that a moderate or even considerable thickening of the dura is necessarily a cause of the irritation producing the convulsions. The pericranium is brought together over the bone flap by a number of interrupted sutures. The advantage of the bone-flap method over trephining with enlargement of the opening lies in the large area of the surface which may be readily exposed. This was well illustrated by the case which I have reported as cured. Here a previous trephining had been done for the cure of the epilepsy, and a spicule of bone, nearly one-half inch in length, had not been found. This spicule penetrated the dura and pia and was surrounded by a superficial cyst of the size of a hazelnut. The removal of this spicule and cyst was evidently what led to the cure.

But besides the exposure of a large area there is the additional advantage that this large area may be again covered by bone, which protects the brain from injury and prevents the adhesion of the scalp and dura. How well this replaced bone flap heals in place was beautifully illustrated in the first case operated upon, where imbecility was associated with epilepsy and in which Dr. Fisher had the opportunity of examining the skull and brain after death, eighteen months later. The flap, which was about an inch thick, was found firmly and evenly healed and presented a perfectly smooth inner surface along the line of incision. More than this, the dura, which had been incised, turned back, and then sutured, was perfectly healed, and there were no adhesions between the bone and dura or between the dura and pia, which further testifies to the possibilities of this method. In another case the scalp and pericranium were accidentally pulled from the bone flap by the retractors, yet the bone flap healed perfectly.

The bone-flap operation is applicable not only to cases of epilepsy, but to almost any operation on the brain or its coverings, to operations for tumors, cortical or cerebral hemorrhage, removal of the Gasserian ganglion, abscess, cysts, etc. In the latter two classes an opening for drainage may be made by the rongeur at any part of the circumference of the flap, or by the trephine through the body of the flap.

One lesson, it seems to me, is most impressively taught to the surgeon by these cases of traumatic epilepsy, namely, the necessity and importance of thoroughly treating cases of fracture of the skull

at the outset. I think that we can do more in this manner in the way of prevention than we can do later in the way of cure.

DISCUSSION.

DR. JAMES W. PUTNAM, of Buffalo: As to operations for the relief of idiocy. Lannelongue, in 1890, advocated the excision of strips of bone about one-quarter of an inch wide and extending parallel to the sagittal suture, from forehead to occiput. The theory upon which this operation was based was that the premature closure of the sutures arrested skull growth, and that, as a result of the small skull, brain development was arrested and idiocy resulted.

The question is whether the six years that have elapsed show that this operation has achieved the results claimed by the originator. The first indictment against craniectomy is the mortality. This has been reported by different operators at from 25 to 50 per cent. As regards this question of mortality in this unfortunate and hopeless class, I am not at all convinced that it is in any way an argument against the operation. The operation, if fatal, has removed a useless and hopeless member of a family; yes, a more than useless member, a burden and a drag upon families unable to bear the financial burden. So that the question of the mortality-rate in these cases does not deter me from proposing the operation, and allowing the parents to decide after they are fully acquainted with the possible results.

If this operation does not result fatally, what is the improvement noted? Many of the cases show no improvement. Some show a slight improvement for a time, but still remain a care. A few are much improved. In Buffalo we have seen two cases which were markedly benefited.

The first case, one of Dr. Crego's, has been already reported by Dr. Park, who operated. This was an idiot with convulsions. He was filthy and destructive. After the operation he gradually improved in his habits. He showed a general mental improvement and his convulsions ceased. In another case, one of my own, improvement was observed. Three other cases that I have observed were not benefited. The proportion of cases benefited is small, perhaps not 10 per cent. On the other hand, none, so far as I can learn, were ever made worse. Therefore, it seems to me that the present standing of craniotomy for the relief of the microcephalic idiot is that the hope of Lannelongue has not been realized as to the number benefited. The operation, however, has its place as a remedy that, in a few cases, will be of great value, and in most cases will do no harm. For that reason it is my

judgment that in an otherwise hopeless condition the operation will always be justifiable.

W. W. Keen, in *Nervous Diseases*, by Dercum, comes to this conclusion: "In such a distressing and otherwise irremediable disease I think that operation is at least permissible."

Gray in his second edition says: "I think an operation is justifiable in suitable cases. Even if it does no good, the operation should do no harm; and as there is a possibility that the future may enable us to diagnose suitable cases, I can see no objection to the procedure."

Such is the status of this operation.

DR. JOSEPH COLLINS, of New York: I should be very sorry indeed if in a discussion before an assemblage of general practitioners the status of brain surgery should be limited as it has been outlined here to day. You have heard the speakers give their experience with the operative treatment of traumatic epilepsy, with cases of brain tumor, and in cases of microcephaly; the reports have not been very encouraging, and I would ask whether we must draw the conclusion from this discussion by authorities on the subject that operations in cerebral surgery are practically for naught. There is one disease where surgery is the only therapeutic agent of the slightest avail; I refer to brain abscess. If there is any one subject in neurology which is worthy the careful attention of the neurologist and surgeon, it is that of encephalitis purulenta. This is a condition which all of us as general practitioners are called upon to see every year of our lives. Those of us who treat children know that in chronic otitis media a brain abscess may develop without the slightest warning and jeopardize the life of the patient. If the neurologist and the surgeon do not teach us that the one plan of treatment which is productive of good results in a large proportion of cases is surgery, they will die under our helpless hands. The point which I wish to convey as emphatically as I can is that chronic otitis media purulenta produces at least 35 to 40 per cent. of all cases of brain abscess. This should be prevented if possible; but after it has developed, the only successful treatment is surgery.

DR. FLOYD S. CREGO, of Buffalo: Nearly ten years ago the New York specialists reported very brilliant results from surgery in epilepsy, much better results than were reported in Europe. The gentlemen who have read papers this afternoon have gone to the other extreme from the one they assumed several years ago. I think there is a middle ground, and one which the Germans have occupied all the time, that in the treatment of epilepsy surgery takes an important place. In all traumatic cases, whether there is depression of bone or not, provided we can localize the lesion, or can prove that there has been decided trauma, an operation should be performed. I am sure that the experi-

ence of Buffalo surgeons has not been as discouraging as that related by the readers. And I feel sure that this same ground, a sort of middle ground, is occupied by the Germans and English.

With regard to Dr. Dana's little joke on the disciplinary method of treatment, I had always supposed that the operation of craniectomy on idiots was for the purpose of improving the nutrition of the brain, just as suspension was introduced in a certain disease to improve the nutrition of the spinal cord. I believe that is the generally accepted theory. The results of craniectomy in some cases have been very remarkable. The case referred to by Dr. Putnam and Dr. Park I mentioned several years ago, that of a patient who after operation had no return of epilepsy, who improved mentally and physically, and is entirely well to-day. From that down, we get all grades of improvement. I believe the view generally prevails among surgeons that they do not need to treat the patient after operating; I always insist upon medical treatment afterward, following the recommendation of Gowers that the medicines be continued at least two years after cessation of the epileptic attacks. We have had far better results than the readers have reported to-day.

DR. EDWARD B. ANGEL, of Rochester: I wish to call attention to two points: One bears on the question of covering the opening made with the trephine by bone flap. Some years ago I reported a case to this Society, in which I trephined for epilepsy and called attention to the fact that it was entirely needless to put back any plate of bone-tissue to replace that removed from the skull. Since that time I have seen perhaps a dozen cases of trephining without replacing bone or putting in any form of plate, and in all the fibrous tissues which subsequently formed was quite sufficient to protect the brain from external injury. I remember a case in which a large part of the bone of the forehead was removed, and the fibrous tissue which formed was so dense that it was absolutely impossible to cause injury except with a sharp or pointed instrument.

I disagree with my friend, Dr. Fisher, regarding completing the operation at once. In two cases operated upon within the past two years I have followed the plan of dividing the operation, first simply removing a sufficient amount of the skull to relieve any pressure which might be causing trouble over the area supposed to be the seat of irritation. There the operation was dropped, and in both instances there was a very good result. In one case the child was four years old, an imbecile and epileptic, a pest in every sense of the word. There has been no return of the epilepsy, there was immediate improvement morally and physically, and it has been increasing ever since. Nothing was done except to remove a sufficient amount of the cranium to relieve pressure. The second case was one of Jacksonian epilepsy, operated upon last

July, removing a large plate of bone over the cortical area, nothing being found to lead us to go further. There was no cessation of the epilepsy for a period of a month when the child passed out of my care, but I have heard since that during the last two months there has not been an epileptic seizure, although previously there had been twenty to thirty a day. These cases are important, for the relief has followed simply removing a piece of the cranium, something which any surgeon can do, and if a further operation should be required it can be done at another time.

VI. ABDOMINAL SURGERY.

1. COMPLICATIONS IN ABDOMINAL SURGERY REQUIRING INTESTINAL ANASTOMOSIS.

By A. VANDER VEER, M.D.,
ALBANY.

BELIEVING that the subject to which this paper refers will present a more practical and forceful statement of true facts in regard to the intestinal anastomosis, I have thought best to report the following three operations as a type of cases coming to the abdominal surgeon and claiming his most earnest attention as to the best procedure for the benefit of his patient:

CASE I.—Mrs. A. S., aged forty years, widow; referred to me by Dr. John DeWitt, of Saugerties, N. Y. History of a rapidly developing abdominal tumor for a period of six months; epileptic seizures for ten years.

Operation January 14, 1895. Multilocular ovarian cyst, left ovary; papillomatous; unilocular ovarian cyst on right side removed with very little trouble. On removal of tumor on left side many adhesions were encountered and a coil of small intestine completely imbedded in growth. Necessary to do intestinal resection. Eight inches of ilium removed; ends brought together by Murphy button; operation exceedingly simple. Patient nervous after operation; no vomiting; catheter necessary; hypodermic use of morphine, as patient previously accustomed to its use. Third day free movement of gas; eighteenth day well-formed movement of bowels. Two days later two decided convulsions; partly delirious for over a week. Nineteenth day, while in care of daughter, patient had three movements of bowels, which were thrown away without examination. Very likely button passed at this time, as it was never found in stools afterward. Patient made a remarkable recovery; is now, January 18, 1896, in absolute health, and gained much in flesh. No convulsions in ten months; abdomen soft; and recovery apparently perfect.

CASE II.—Referred to me by Dr. Crandall, of Fort Edward, N. Y. Mrs. J. J., aged thirty-four years; three children. Family history indefinite. Hernia at umbilicus, size of hen's egg, at first confinement; never reduced. Confinements since normal. Bowels always constipated. October 3, 1895, while straining at stool, suddenly taken ill; tumor increased in size; vomiting and much pain. Saw patient 4 P.M. Monday, October 7th. Learned she had vomited contents of stomach previous Sunday and once at 12 M., Monday; yellowish substance; portions dark-colored. Passed some gas per rectum in past forty-eight hours. Three cathartic pills had been given, but did not move bowels; moderate amount of morphine required to relieve pain. She entered Albany Hospital, 8 A.M., October 8th, and operation done at 10 A.M. Tumor, size of cocoanut, in immediate vicinity of umbilicus; portion, size of silver dollar, gangrenous. Incision revealed strangulated hernia; many old firm adhesions. Peritoneum intensely congested; very dark in color. Loop small intestine, gangrenous for ten inches, included in tumor. Vessels in mesentery secured; V-shaped portion of mesentery removed with intestine, also large portion of omentum and entire sac formed of peritoneum. Murphy button used for end-to-end anastomosis. Two Lembert sutures outside of button. Wound closed by silkworm-gut sutures; no drainage. After operation patient vomited dark, greenish fluid and complained of severe pain in back. 3.15 P.M. on 9th, large movement of bowels evidently from portion below point of anastomosis. Some nausea and vomiting afterward; two more movements same day, then much better afterward. Bowels continued to move freely, and at 5.30 P.M. 21st, thirteen days after operation, button passed. This patient made an uninterrupted recovery, and returned home in excellent condition. Has been well since.

CASE III.—Referred to me by Dr. Crombie, of Mechanicville, N. Y. M. C. D., aged twenty-five years, Italian laborer, about one year a resident of this country. 11 A.M. Thursday, January 9, 1896, while lifting heavy stones, stated he felt something "give away" in lower part of abdomen on right side. He was obliged to stop work; nausea and vomiting presented at once, and a tumor in right inguinal region presented, which became very painful. An attempt at reduction was made, but not successful. He was taken to his Italian quarters, accommodations being very limited, where his companions gave him some treatment, and patient stated that he had a small movement of the bowels after the accident, accompanied with great straining and forceful effort. Vomiting continued, and he was in much pain most of the time. No physician called until Sunday night, January 12th, when Dr. Crombie saw him and recognized at once a serious case. The vomiting was of a dark, yellowish material, at times spinach-like, with a decided fecal odor. Patient brought to Albany Hospital early Monday morning, January 13th, with a temperature above 100°, pulse 110, eyes sunken, expression of face that of exhaustion, with much pain; abdomen distended; hard, board-like sensation and all the evidence of septic, general peritonitis. Anæsthetic given at 11 A.M. Very slight effort at reduction of tumor, believing it an oblique inguinal hernia, on right side, not extending far down into the scrotum. Testicle greatly retracted and drawn up

close to external ring. Operation proceeded with at once. Layers covering sac very oedematous and in places dark and gangrenous. Sac contained a large amount of dark, bloody fluid and was in a gangrenous condition. On further exploration the tumor was found to have made its exit out of the internal ring, filling the inguinal canal, and instead of working its way out of the external ring had become an interstitial hernia, extending beyond the median line to the left, made up of a part of the smaller intestine, and all in an extremely gangrenous condition. The constriction at the point of exit of the gut was very tight. On loosening up the adhesions the spermatic cord was found in a gangrenous condition, together with its vessels, and it became necessary to remove the testicle on that side. Constriction was relieved and coils of intestine withdrawn, to see as to amount of resection necessary, and in loosening up adhesions much time was lost. When resection had been completed, the vessels in mesentery secured, etc., an hour and one-half had been consumed, the case being an exceedingly tedious one. The Murphy button was employed, but a few moments consumed in introducing it, and the anastomosis completed. The patient presented well-marked septic peritonitis. After the sac had been thoroughly removed, upper portion of wound brought together and the lower portion of the gangrenous walls packed with strips of iodoform gauze, the patient was placed in bed at the end of one and three-quarter hours from beginning of operation. Reacted well, and at 8 P.M. his pulse was fairly regular (120), temperature about normal, vomited but little, and was very comfortable. Expressed himself as feeling much easier, but during the night he presented more marked symptoms of collapse; rectal injections were made use of, hypodermics of strychnine and nitroglycerin, warmth applied to extremities and to lumbar regions, but after 6 A.M. of Tuesday, January 14th, he sank rapidly, and died at 9 A.M.

Post-mortem showed incision in right inguinal region packed with iodoform gauze. Gauze being removed stump of sac of hernia presented, intensely inflamed, but not adherent. Incision carried upward and counter-incision made transversely across abdomen about one and one-half inches below umbilicus. The flap being laid back the omentum was seen intensely congested and firmly adherent to intestines. Small intestines inflated and prominent. The anastomosis seen superficially, and union fairly good, except on superior surface, where gangrenous slough presented. Intestines were adherent and covered with plastic lymph in places. In vicinity of anastomosis intestines firmly adherent. Union of mesentery secure but presented a very dark, almost gangrenous appearance. Button intact; a mass felt in lumen of intestine immediately beyond the button. Button, with section of intestine and mesentery, being removed, fluid found to pass through button; no obstruction along course of intestine. Large intestine completely collapsed; liver slightly congested, otherwise normal. Stomach contained some fluid material; gall-bladder full; spleen enlarged and somewhat softened; parietal portion of peritoneum ecchymotic and glistening appearance lost in places; appendix normal, curled behind cæcum; no hemorrhage anywhere to be seen; posterior surface of right internal abdominal muscle gangrenous near the sac of hernia.

These three, with other cases I might report, illustrate fairly well conditions that present at a time when the abdominal surgeon is called upon to do an intestinal anastomosis, not infrequently the patient being in a state of severe shock, the operation being a tedious one.

The active, earnest, honest operating surgeon has now presented in such cases the important problem, what is the best course to be pursued for the benefit of his patient? If he has been in practice a quarter of a century or more he naturally thinks of his early training and considers as to the rapidity with which he can perform end-to-end anastomosis or circular enterorrhaphy by means of the Lembert or Czerny suture, but at the same time there is crowded in upon his mind many other methods that have been suggested, and from all of which he must select that which will give the most rapid and perfect result, shortening the operation as much as possible. He cannot deny that the prolonged operation of anastomosis lessens the chances of his patient's recovery. It is evident that surgeons have not been altogether satisfied with the older operation of circular enterorrhaphy without any mechanical contrivance. Those of us who have looked up this subject somewhat earnestly during the past few years have had brought to our notice the fact that many surgeons have been seeking aid in this direction of some mechanical contrivance for many years.

In the London *Lancet*, October 19, 1895, is given an article on "An Early Method of Intestinal Approximation," reported by Leonard Gamgee, of Birmingham. He states that in looking up the subject in South's *Translation of Chelius's Surgery*, published in 1847, he found on page 464 of vol. i. the following: "In complete division of the intestine Denans introduces into the upper and lower end of the gut a silver or zinc ring, thrusting it in upward about two lines from each end; he then brings the two ends together over a third ring, of which the two springs retain the external rings. The included ends of the intestines mortify, and the rings becoming unfastened thereby are discharged by stool after they have united the serous surfaces in contact. This experiment in the dog has most successful results."

Recently I heard a most excellent report of a case of intestinal end-to-end anastomosis by Dr. Bedford Brown, of Alexandria, Va., given at the meeting of the Southern Surgical and Gynecological Association, held in Washington, November 12, 1895, in

which he states he had made use, thirty years ago, of a solid cylinder of cocoa-butter introduced into the calibre of the intestine, over this rapidly bringing together the peritoneal surfaces of the small intestine by the Lembert suture, a perfect result following, the substance taking care of itself afterward by evacuation of the bowels. However, as this case was not reported at the time, the profession was not able to take up and make use of this very happy and useful suggestion.

As I have stated in a previous paper, perhaps there is no part of surgery that, within the past quarter of a century, has presented so much in theory and in which there has been so much disappointment, when practical use has been made of the suggestions, as in the field of abdominal work with all its complications. In other words, how much we have changed from time to time our methods of treating many complications, and yet, withal, there have come certain reliable advances that have met all requirements for which they were indicated, leaving permanently in our possession the comforting thought that a grand progress in the sum total has been made; that we can treat all manner of pathological conditions, traumas, malformations, etc., of the intestinal tract and abdominal cavity with less embarrassment, perhaps, than any other part of the body, and yet there are very few portions of the human system upon which we operate where more rapid thought and best judgment are to be employed than in abdominal surgery. The best methods for meeting this and that complication must be adopted at once. There can be no great delay; temporary dressings cannot be applied for the time being; expectant surgery has no field here. We must meet the emergencies at once. Therefore, in presenting the above cases, with such remarks as each one seems to call for, I am desirous, simply, of placing on record facts which may assist in future operations, and aid us in our final determination of certain procedures when conditions arise that require their employment.

There can be no doubt that the consensus of opinion to-day among operating surgeons dealing with abdominal cases, is that, when we come to intestinal anastomosis, our patient is not infrequently in a serious condition as regards strength, as was the case particularly with Case III., just reported; therefore, all things being equal, that method which will give us the most rapid and surest manner of procedure is the one to claim our attention. Rapid-

ity of action at such a time is absolutely necessary, and yet with it must be combined thorough safety.

The most pronounced efforts at a solution of this question of intestinal anastomosis were revived and brought out by Dr. Senn in *The Journal of the American Medical Association*, vol. xxi. pp. 215-218, in the introduction of the decalcified bone-plates. If one has given careful attention to the subject since, he cannot but be convinced that we have as yet not reached perfection. I believe this to be an axiom in surgery, that while there are many operations or methods suggested, and many mechanical contrivances, either by experimenters or actual employment, yet none seem to be greatly in the lead, for the cure of some particular surgical lesion there is yet something additional required. It is not necessary for me to refer to my direct experience with the bone plates. I believe it is in keeping with the opinion of other operating surgeons that constrictions afterward of the opening takes place and obstruction follows in many cases within a certain number of months.

Following this method we had the rubber-ring suggested—rubber plates, segmented rubber rings, solid rubber rings, rawhide plates, Spanish turnip, American potato, elastic ligatures, the Abbe ring of catgut (a most admirable suggestion), the decalcified bone-tubes of Jessett (of England), the bone-bobbins of Robson (of England), Dawburn's vegetable-plates, Littlewood's bone-plates, gelatine and cartilage plates, Dr. Davis's catgut mats, Matas's silk-ring, the Murphy button, etc. Some have had no advocates outside of their inventor; some have had a wide range by being adopted by other operating surgeons. None have obtained a very great hold upon the many operating surgeons, possibly Abbe's catgut ring having received as great indorsement as any one method; but even Abbe has discontinued its use and other methods of this kind, because of the gradual constriction of the original opening, and he now depends entirely upon the suture, evidently preferring lateral anastomosis. Of these many suggestions the Murphy button is still in the advance in this country. On the other hand, we have had some practical forms of suturing suggested; of these possibly the most scientific and perfect in its way being the Halstead method, and yet it has received very little indorsement from the profession at large. Another suggestion, that of McCann, of making use of the Lembert suture in a modified form, the same in reference to Connell, of Milwaukee, of silk or catgut suturing

in two knots. All methods of suturing have been more or less criticised by operating surgeons, the main objection being that much time is required in the introduction of the suture. Even Abbe's method of lateral anastomosis has not to any great extent been followed out by many surgeons. Davis, in his very excellent article on "Anastomosis Without Mechanical Contrivances," gives indorsement to this method, but at the same time prefers his own use of suturing, making it a more modified operation. Maunsell's method of anastomosis, without the use of foreign substances, really presents the most reasonable and successful line of procedure of anything we have yet had, and my impression is that it is likely to come into more universal use than any other form suggested, except it be the one to which our attention has been called by Rutherford Morrison, of England, and Grant, of Louisville, Ky., each one presenting a form of forceps, the latter of which I show you through the kindness of Dr. Macdonald, of this city, together with these plates, believing it is a method that is likely to receive recognition; however, when we come to consider all methods of intestinal anastomosis that are to be employed in the complications that present in abdominal surgery, such as gangrene from hernia, such as portions of intestine adherent to abdominal tumors, that must be removed, and in which resection becomes necessary, resection of intestine for malignant disease, for lacerations, all conditions that call for removal of a portion of the intestinal canal, or for anastomosis of one portion of the intestinal tract with another, or to the gall-bladder or stomach, we have had, since 1892 more particularly, our attention called to a mechanical contrivance called the Murphy button, that is certainly standing the test well in a certain class of operations, and of these operations I believe the three cases here reported are very fair types. Even this method has many objections presented, although the statistics now accumulating, and the tables we have given, enable us to judge somewhat definitely as to its true value. It is true that cases have been reported where the button has dropped back into the stomach, has found its way into the gall-bladder instead of going on down the intestinal tract, but these conditions are to be avoided in the former instance by making the anastomosis with the posterior wall of the stomach, and in the latter by the use of a larger-sized button.

I quote from an article in the *Medical Record*, December 28, 1895, the following on the dangers of the Murphy button: "Death

occurred in one case from plugging of the button with hardened feces. In another case the button was removed from proximal side of anastomosis by second operation. Again, death occurred from intestinal gangrene at site of button—possibly from too close approximation of the edges, or its extreme size, weight, etc.” It is evident from the above that the danger of retention of the button is a real one, notwithstanding the successful cases reported. Parkhill, of Denver, reports in the *Boston Medical and Surgical Journal*, October 17, 1895, a case in which enterocolostomy was performed for the exclusion of a cæcum and ascending colon which were riddled with fecal fistulæ, as a result of appendicitis, largest sized Murphy button being used. Three months later operation done for excision of diseased cæcum, when opening at site of anastomosis found so small as to barely admit tip of index finger as far as base of nail. Circumference of finger at that point two inches, while that of button employed was three and one-quarter inches. This is believed to be the first time amount of contraction of lumen, after anastomosis, on living subject, has been measured, and the question whether such contraction will continue is an interesting one. The writer, however, still further states that, contraction or no contraction, this was the correct procedure in this case, as patient’s condition precluded any more time-consuming method.

Again, in the same journal, Abbe reports a case of anastomosis in strangulated hernia—five inches of gangrenous bowel being removed—where patient died forty-eight hours after. Autopsy showed that weight of button had caused it to gravitate to bottom of pelvis, causing a sharp kink at site of anastomosis. Dr. Rushmore thought that the gut must have been paralyzed by the obstruction or the muscular coat would have been able to force the contents through lumen of button and straighten out the kink.

Again, on the contrary, its advantages, as set forth by so conservative a surgeon as Frederick Treves, of England, *Chicago Clinical Review*, September, 1895, must carry added importance to this mechanical contrivance.

In looking up this subject carefully, perhaps it would not be out of place to state its advantages, as set forth by Dr. Murphy himself in the London *Lancet*, August 17, 1895. He states that seven points require attention in attempting to obtain union between two pieces of bowel. They are: 1. Coaptation of surfaces, and the union should be between similar tissue—that is, the muscular coat

should join the muscular coat, and the mucous membrane of one portion should be in contact with the mucous membrane of the other. 2. Adhesions should form immediately. 3. Sufficient calibre should be left at the point of union. 4. Permanent organized adhesions should result. 5. The line of union must not contract to any great extent. 6. The process should be aseptic. 7. The method employed should take the least possible time. Surely we must admit that these conclusions are to the point when conditions present to us as operating surgeons where we can employ the Murphy button !

The use of the Murphy button has been shown to possess inherent advantages which should restrict its use to those cases in which it is necessary to hasten in order that the patient may survive the shock of the operation.

It cannot be made use of for every form of intestinal anastomosis, which I believe statistics prove to be the case. As was stated by Dr. Reed, in a recent discussion of this subject, at the meeting of the Southern Surgical and Gynecological Association, the Murphy button is at the present time the best mechanical contrivance for circular enterorrhaphy in operations upon the small intestines, where the contents of the bowel are in a fluid state, but that it is not a proper device in operations upon the large intestine, as the calibre becomes plugged with hardened feces, and is likely to be the cause of obstruction. After careful study of this subject, I am inclined to draw the following conclusions : That in incised wounds of the intestines, in whatever way they may have occurred, in a single gunshot wound, made by a weapon of small calibre, we will still adhere to the Lembert-Czerny or some modified form of suture, without the use of mechanical devices. That in doing other more serious operations the element of time must be taken into consideration.

Levings, of Milwaukee, has made some very interesting experiments, *Chicago Clinical Review* for November, 1895, and gives us the following table as to length of time required in performing anastomosis by different methods :

Cushing's suture, end-to-end union	.	.	2 min.	3 seconds.
Connel's " " " "	.	.	2 "	9 "
Murphy button, " " "	.	.	3 "	22 "
Czerny-Lembert suture, end-to-end union	.	.	5 "	
Senn's plates, lateral anastomosis	.	.	9 "	52 "
Abbe's suture " "	.	.	14 "	5 "

It will be observed that in his case the Murphy button was not the speediest method, yet, taking it all in all, it is certainly holding its own and making a pronounced impression upon operators, and until something better is suggested is likely to be the preference. Certainly for anastomosis between the gall-bladder and duodenum it is the most perfect device we have at present. The same can be said of anastomosis between the stomach and smaller intestine by using the oblong button instead of the circular one.

I am convinced that the Maunsell method is likely to claim careful attention in the near future, where the button is not to be made use of, and where we have to make an anastomosis in the large intestine, or of the small and large intestine.

One is surprised to see the lack of confidence shown in the Murphy button abroad.

In a letter from Dr. Hurst, a former student of mine, a graduate of our college, now a pupil and assistant of Prof. Von Bergmann at Berlin, received January 25th, he states as follows: Prof. Von Bergmann has used the Murphy button on seven dogs, with fair success, but only once on any of his patients. In this case, one of incarcerated hernia, the intestine, on opening hernial sac, was found gangrenous, and resection plainly became necessary. About seven centimetres of ilium removed; leaving no trace of gangrenous tissue. Medium-sized Murphy button then inserted, gut returned to abdominal cavity, wound closed and dressed, and patient placed in bed. Temperature gradually increased, and patient died on fifth day; no autopsy.

Prof. Von Bergmann states his reason for not trying again was that to him the idea was not a plausible one—of putting a piece of metal in the “belly.” He has a whole set of the buttons, but has no use for them.

Prof. Sonnenberg, Professor of Surgery at the Moabit Krankenhaus, said he had used the button three times, as follows: First patient died on third day; second patient passed button on eleventh day and recovered; third patient died on fourth day. He further states that the two patients who died were very weak, having been sick some time previous to the operation. He is favorably inclined to the button, but avoids using it owing to the general prejudice in regard to it in Germany.

VII. ABDOMINAL SURGERY.

2. A RARE COMPLICATION OF APPENDICITIS.
(PYLEPHLEBITIS SUPPURATIVA.)By HERMAN MYNTER, M.D.,
BUFFALO.

DURING the last three years I have treated in the Sisters' Hospital in Buffalo forty-six cases of appendicitis by operation. Twelve of these cases had appendicitis with perforation and local abscess, ten of which recovered, while two died, one of embolus, probably from the iliac vein, and one of septicæmia shortly after the incision, without narcosis, of an enormous retrocæcal abscess which had been overlooked by the attending physician. Extra-peritoneal operation was performed in six of these cases, of which one died (the case of septicæmia mentioned); laparotomy was performed in the other six cases, of which one died (the case of embolus mentioned), while five recovered, three after opening and draining large abscesses, without removing the appendix, and two after opening smaller abscesses and extirpating the appendix.

Total gangrene of the appendix, without limiting exudations, but yet without perforation, was found in seven cases. They recovered all by prompt laparotomy and extirpation of the gangrenous appendix.

Gangrene with perforation and diffuse peritonitis was found in fifteen cases, two of which, in which the operation was performed comparatively early, recovered after extirpation of the appendix and thorough irrigation and drainage of the peritoneal cavity, while twelve died of diffuse peritonitis in spite of the operation, and one of gangrene of the cæcum after the peritonitis had ceased. Twelve cases were operated by laparotomy for chronic catarrhal and relapsing appendicitis, and they all recovered. I have met in these forty-six cases some rare complications, of which I desire to mention one particularly.

Mr. C. A. S., aged forty-five years, manufacturer. Had always enjoyed good health with the exception of a rather obstinate constipation. He felt out of sorts on October 21, 1895, but continued to take care of his business

for two days. He felt worse on October 23d in the evening, and the family physician ordered a light cathartic and morphia hypodermically. He complained during the night of continuous, severe pains around the umbilicus, for which hot applications were used.

On October 24th the temperature was 100°, pulse 92. The bowels moved freely, but pains continued and vomiting commenced.

On October 25th, temperature 101°, pulse 106. The pains were localized in right ileo-cæcal region, and a severe chill occurred. I was called in consultation, and found pronounced rigidity of the muscles over the right iliac region, where he was very tender for pressure. Left side was less tender, without rigidity. Respiration 18, abdominal.

Laparotomy was performed two hours later. The peritoneum having been opened by a four-inch incision through the muscles, the lower end of the cæcum was found intensely congested and covered with fresh exudations and an adherent coil of ileum. This coil having been loosened, about three ounces of stinking pus, mixed with air, were removed by sponging. The appendix was found totally gangrenous, was seven inches long and extended straight down into the pelvis. It was perforated near the tip, and was isolated and removed with a good deal of difficulty. The pelvis contained a sero-purulent exudate, and was therefore washed out with sterilized salt-solution, an aluminum drain introduced to the bottom of Douglas's fossa and a wick-drain to the stump of the appendix. The wound was partly sutured. Evening temperature was 98.5°, pulse 76.

On October 26th, pulse and temperature normal. About one and a half ounces of bloody serum were pumped out through the tube.

On October 28th, temperature normal, pulse 92. He commenced to complain toward evening of pains over the abdomen, and had a severe chill. He commenced shortly after to vomit a mucous fluid of an intensely black color, almost like coffee-sediment. The stomach was therefore irrigated and a large amount of a similar fluid, estimated at one quart, removed.

On October 29th, temperature 101°, pulse 92; tongue dry. The abdomen was soft without symptoms of peritonitis, but tender to pressure upward. No swelling of spleen or liver. He had had a large evacuation from the bowels of a very black color. The patient had a strong icteric color, the urine was scanty and full of bile-pigment. He was semi-comatose, with stertorous respiration, and vomited continuously, in spite of irrigation, a dark blackish fluid. The coma increased toward evening, and the patient died at midnight. A post-mortem examination was not allowed, but the diagnosis, nevertheless, was in my opinion clear. It could be nothing else but pyelephlebitis suppurativa—i. e., phlebitis of the portal vein.

I shall take the liberty of making a short extract from Van Schueppel's article in *Ziemssen's Cyclopedia*, vol. ix., so much more as it is the only extensive article I have found on this subject.

While thrombosis of the portal system is of comparatively frequent occurrence, dependent upon marasmus with weak heart, or

compression of the portal vein or its branches in the liver, as in cirrhosis, or by tumors or cicatricial retraction of new tissue, textural changes in the wall of the vein itself are necessary in order to produce phlebitis, and the disease is much more rarely met with. It is, therefore, generally secondary to suppurating processes in the abdomen, an inflammation spreading to the portal vein or its branches, and producing purulent infiltration in the wall, resulting in thrombosis, the thrombi then undergoing purulent softening and the vena porta appearing filled with pus. The disease usually commences in the radicles of the portal vein, and the thrombi spread along the trunk into the hepatic branches, producing inflammation and ulceration of the wall, while they themselves become disorganized and changed into pus. Another way of extension is by emboli, a piece of the thrombus being broken off and carried into the liver-branches, producing abscess here and retrograde thrombosis of the trunk, followed by phlebitis, if the thrombus is of considerable size. Liver abscesses, dependent upon dysentery with phlebitis in the hemorrhoidal veins, are probably the result of small emboli. The trunk of the portal vein may be the starting point, and the thrombosis spread to the hepatic branches and backward to the radicles, the secondary thrombi undergoing purulent softening, and the walls inflaming and ulcerating to such a degree that the whole vein may be changed into a gangrenous cavity. The affected veins appear as rigid cords, with thickened, injected and pus-infiltrated walls, which gape on section. The connective tissue around the veins is congested, the intima discolored, softened, and ulcerated. The hepatic branches are filled with pus; the liver may contain many small, or a few larger abscesses surrounded by hepatic tissue and communicating with a portal vein.

Pyemic abscesses may be found in lung, brain, kidney, spleen, etc., when the inflammation spreads from the portal to the hepatic vein. Peritonitis with purulent or sero-fibrinous exudation is generally present.

The etiology of this rare disease is well known. It may occur in any age, even in earliest childhood, when it may start as pylephlebitis in the umbilical vein after ligation of the cord, due either to trauma or infection. Most cases, however, depend upon ulcerative processes around the radicles of the portal vein, which involve the walls of the vein, produce phlebitis and consecutive thrombosis, which spread upward along the vein, or by embolus,

in either case producing a thrombo-embolic pyemia of the portal system.

Appendicitis forms the most frequent cause, through infection of a mesenteric vein, when the mesentery or omentum is adherent and agglutinated to the gangrenous appendix. The cause may, however, be found in gastric and intestinal ulcers, in phlebitis in the hemorrhoidal veins after wounds, operations, or ulcerations in the rectum, or after dysentery, in abscesses in the spleen, spreading through the vena lienalis; in abscesses due to suppurating glands in the mesentery, or localized peritonitis around the hepatico-duodenalis ligament. The liver, too, may be the starting point, although it, as a rule, is attacked secondarily. The disease may then be due to suppuration dependent upon gall-stones or echinococcus, the liver branches and the trunk being primarily affected, while the radicles are normal.

The symptoms of pylethrombosis depend principally upon the occlusion of the portal vein, and consist in rapidly occurring ascites, swelling of spleen, watery diarrhœa, mixed with blood, and dilatation of subcutaneous veins—the so-called caput Medusa. The collateral circulation becomes established between the portal vein and the superior and inferior vena cava in a roundabout way. In the liver we find a direct communication between small branches of the portal and hepatic veins; *i. e.*, accessory portal veins. The superior gastric vein communicates with the inferior œsophageal vein, and through that with intercostal veins and vena azygos and with superior and inferior diaphragmatic veins to superior and inferior vena cava.

Another roundabout way is through the hemorrhoidal plexus. The superior hemorrhoidal vein empties its blood into the inferior mesenteric vein, which is a branch of the vena porta, but communicates through the hemorrhoidal plexus with the inferior hemorrhoidal vein, which is a branch of the internal pudendal and hypogastric vein, and through them, of the inferior vena cava.

The most important communication, however, takes place through the venæ parumbilicales, originating from external iliac and epigastric veins in pairs, uniting near umbilicus and receiving branches from gall-bladder; they ascend to the round ligament, receiving branches from peritoneum and rectus muscles and empty into portal vein. The Medusa head may form, when the portal circulation in the liver is obstructed, but the trunk is permeable, and the blood

from the portal vein passes then through the umbilicus into the veins of the anterior abdominal wall.

The symptoms of pylephlebitis depend less upon occlusion of the portal system than upon septic and thrombo-pyemic processes preceded by the symptoms of the original disease which caused the phlebitis.

Pain is always present, starting in the ileo-cæcal region, when appendicitis is the primary cause, or in the region of the spleen, epigastrium, or hypochondrium when the primary cause is found here. The hepatic region is always painful. The pain is in the beginning probably due to inflammatory infiltration of the wall of the diseased vein, later to diffuse peritonitis. The liver is moderately enlarged, according to the size of the abscesses; when these are wanting the liver may be normal in size. The spleen is enlarged by stasis from occlusion of the splenic vein, except in case of profuse hemorrhage from the stomach, when it may remain small.

Icterus is not a constant symptom. It may depend upon compression of the hepatic bile-ducts by the thickened branches of the portal vein; icterus is then imperfect, the urine containing bile-pigment; the feces not being whitish. This is a true hepatogen icterus. In other cases the icterus may be hematogen, dependent upon extensive destruction of red-blood corpuscles and free biliary pigment in the blood, but the urine remains clear and the stools are not discolored.

Nausea and vomiting of a dark-greenish material, and accompanied with diarrhœa, mixed with blood, belong to the early symptoms. Profuse hemorrhage from stasis occurred in my case, but is not mentioned as a frequent symptom.

Peritonitis develops gradually, although it at first is localized. The abdomen becomes distended, and respiration becomes costal; secretion of urine becomes diminished or ceases altogether.

The fever is of the usual septic type, with irregularly appearing chills, high temperature, profuse perspiration and nocturnal exacerbations, and is accompanied with rapid emaciation. Delirium appears, and the patient dies in coma in a few days or after a more protracted illness of several weeks' duration, pyemic metastases in brain, lung, joints, etc., often preceding death.

The diagnosis depends upon the appearance of a number of symptoms in a distinct order, preceded by appendicitis, ulcer of stomach

or any other of the etiological factors. These symptoms are, as mentioned, pain, violent chill, painful enlargement of liver and spleen, icterus, bloody vomiting and peritonitis. The more in number these symptoms are present, the more probable is the diagnosis.

The prognosis is absolutely fatal, and no treatment has been of any avail. I would, however, suggest to carefully examine omentum in all cases of gangrenous appendicitis. If we find it agglutinated to the appendix, or forming a limiting wall of an abscess, it would be in order to remove the omentum in sections; if we should find the veins stiff from phlebitis and thrombosis, and the omentum infiltrated, we may perhaps thus be able to remove the infected veins before larger branches have become invaded.

VIII. ABDOMINAL SURGERY.

3. THE TECHNIQUE OF THE IMPROVED CÆSAREAN SECTION.

BY HENRY J. GARRIGUES, A.M., M.D.,
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THE Cæsarean section may be performed, and performed well, with many variations in regard to details. The *modus operandi* I at present take to be the most perfect is the following: If possible the operation should be performed toward the end of pregnancy, but before labor begins. If feasible, four assistants should be secured: one standing at the head to give the anæsthetic, one on the left side of the patient to attend to sponging, one at the left knee to take care of the compressor, and one behind the operator to thread needles and hand instruments.

All precautions known to aseptic or antiseptic surgery should be taken, preferably in the following way: Operating coats and caps, towels, gauze pads, and silk are sterilized by moving steam. The operator and his assistants disinfect their hands and arms with soft potassa soap, alcohol, and a solution of bichloride of mercury (1 : 2000). The bowels and the bladder having been emptied with aperient medicine and an enema and the vulva and abdomen shaved, the latter are disinfected in the same way as the hands of the oper-

ator. The vagina is disinfected by pouring *tinctura saponis viridis* into it, rubbing it with a ball of absorbent cotton or gauze held in a dressing forceps, and pouring a copious amount—several quarts—of bichloride of mercury solution into it. The instruments are boiled for five minutes in a solution of bicarbonate of soda—a tablespoonful to the quart—and kept in sterilized water. The temperature of the room should be about 80° F. The patient should occupy the dorsal position, with the knees bent down, and the feet placed on a stool at the end of the table, so that the assistant charged with the compression of the cervix may have easy access to the uterus without being in the way of the other participants in the operation. The field of operation is surrounded by four sterilized towels pinned together and to the clothes of the patient.

By percussion the operator satisfies himself that no knuckles of intestine lie in front of the uterus, or he pushes them aside. An incision is made in the median line half above and half below the umbilicus, as in other laparotomies, just long enough to turn out the uterus, and on account of the elasticity of the abdominal wall that means that the *opening is much smaller than the uterus*—about six or seven inches long. The right hand is now introduced into the abdominal cavity and used to turn out the uterus, seizing it in the region of the left corner. Next, the upper part of the incision is closed with three or four silk sutures an inch apart and going through the whole wall, which keeps the intestine and omentum away from the field of operation. A rubber tube is laid loosely around the cervix and the broad ligaments, outside of the appendages, and crossed, but not tied, so that the assistant in charge of this constrictor can easily tighten it and loosen it according to circumstances. The uterus is enveloped in a sterilized cloth rung out of hot normal salt solution (chloride of sodium, 6 per 1000), and a dry pad is placed in front and behind it, to which it is well, if the waters are unbroken, to add a piece of gutta-percha tissue. Next, the elastic constrictor is tightened, and the operator incises the womb. The incision is made with many repeated strokes in the median line of the organ, clamping bleeding sinuses. When an opening is made into the cavity about midway in the incision, the left index finger is introduced and the incision extended on it with scissors or a probe-pointed bistoury up to the upper end of the cavity and far enough down to insert the hand

and pull out the child, but *carefully avoiding the lower uterine segment*, where there are large veins and much less contraction than in the body of the organ. This incision is from four and one-half to five and one-half inches long. If the placenta is inserted on the anterior wall, the incision is carried through it.

If the waters have not broken, the operator tears the ovum near the lower end of the incision, taking care that none of the fluid enters the peritoneal cavity, especially if it be decomposed or contains meconium. If the waters have drained off before the operation, the operator takes particular care not to wound the child in making his incision. When the ovum is ruptured, the operator introduces his right hand, and, if possible, delivers the head of the child first, whereby the danger of the uterus contracting in front of it is avoided. If this is not easily done, he seizes an extremity or the body, and pulls the child out of the uterus. The cord is tied immediately with a double ligature and cut between the two ligatures and the child is handed to a competent nurse, or, preferably, a physician, who, if necessary, uses the usual means of reviving it, while the operator continues his work on the mother. If the placenta is cast loose, he seizes it and peels off the membranes from the interior of the womb, so as to have all the afterbirth in one piece. If, on the other hand, the placenta yet adheres to the wall, he leaves the afterbirth alone, and inserts the deep uterine sutures. By the time he gets through with that the placenta will probably have come off; but if it has not yet separated, he peels it off like the membranes, which always are adherent, before tightening the sutures. If the operation is performed before the cervix is dilated, this should be done manually, so as to insure free drainage from the uterus to the vagina.

For the sutures, I think sterilized silk is the best material—a medium-thick No. 4 of the braided for the deep, and a fine, braided No. 2 for the superficial. The deep are inserted half an inch from the edge through the peritoneal and muscular layer, but do not touch the endometrium. There should be one for each inch of the length of the incision. In tightening them in my first two operations I pulled the peritoneum down with a tenaculum between the muscular surface as much as a quarter of an inch. In my third I did not do this, but in tightening the ligature merely adapted the serous surfaces of the peritoneum against one another, which I believe is better, since then the peritoneum stays outside the muscular

layer, and the cut muscular surfaces are brought more perfectly together. The peritoneum with which we have to deal in a Cæsarean section is a very different thing from the one we meet in gynecological operations. In consequence of its elasticity and the enormous contraction that takes place when the uterus is emptied and shrinks to the size of a fist, it forms a thick, hard, waxy layer, which prevents the perfect adaptation of the edges of the muscular layer. Some use a double row of sutures, one for the muscular layer and another for the peritoneum; others use the somewhat complicated figure-of-eight suture, one loop for the muscle and the other for the peritoneum; and others, again, prefer the continuous suture; but these procedures prolong the operation considerably, and the common suture as used in other operations is all that is needed, but in tightening it the peritoneal edges should be applied against one another with their serous side in such a way as to lie on top of the muscular layer. When these deep sutures have been tied, superficial ones only comprising the peritoneum are inserted midway between two and two of the deep. They are likewise inserted half an inch from the edge, but are pushed out again a quarter of an inch from the latter, and inserted in a similar way on the opposite side, so as to apply broad surfaces against each other.

After the removal of the afterbirth the interior of the womb is simply wiped dry, and clots are removed. No antiseptics are needed, nor should the uterus be curetted.

All sutures being placed and tied, the elastic constrictor should be loosened very slowly, since a sudden rush of blood into the uterus is apt to cause hemorrhage. The uterus should not be replaced into the abdominal cavity before all bleeding has stopped. If there is any bleeding, it is checked by compression, by pouring hot water over the outside of the uterus, by adding supplementary sutures, or, if necessary, by administering an intrauterine injection of plain hot water, or with addition of creolin, tincture of iodine, and liquor ferri chloridi.

When all bleeding has ceased the constrictor is removed, the womb replaced, and the abdomen closed as after other laparotomies. I have in all my three operations only used silk for the abdominal wounds, inserting deep sutures through the whole thickness of the wall, and taking particular care to include the superficial fascia and the aponeurosis of the abdominal muscles. To use tier-sutures prolongs the operation very much and needlessly. I use one deep

suture for each inch, and a skin suture between each two of the deep.

Great care should be taken to avoid the entrance of meconium into the peritoneal cavity. If much enters the cavity should be flushed with hot normal salt solution. If only a little enters it is better to wipe it off and leave an iodoform gauze drain in the lower end of the incision. The omentum should be left at the top of the uterus.

Dressing. I dust the wound with iodoform, cover it with a pad of iodoform gauze, apply a piece of gutta-percha tissue that overlaps the gauze, then a layer of sterilized gauze, a pad of absorbent cotton held in place by broad straps of adhesive plaster, and finally a many-tailed bandage. The genitals and anus are covered with my antiseptic pad as in normal deliveries, which pad is fastened to the abdominal bandage and changed four times a day. The bowels are moved on the third day. The abdominal dressing is changed once a week.

The sutures are removed on the eighth day and replaced by narrow strips of adhesive plaster. The patient leaves her bed at the end of three weeks. As a rule, I do not think the appendages should be removed, repeated Cæsarean section having even a better prognosis than the first operation.

If possible, the operation should be performed in a good hospital, as the chances for an aseptic operation are infinitely better there than in private houses. For the same reason no woman in labor should be examined without full antiseptic precautions.

The improved Cæsarean section is a beautiful outgrowth of general surgical and special gynecological development, an evolution due to the combined efforts of many men working independently of one another in different countries. I do not know of any greater mistake than to attach a single man's name to it. In a special paper,¹ I have shown that every step in this operation had not only been used by surgeons and gynecologists, in other operations, but had been applied to Cæsarean section itself before Sanger's book was published. My first operation is by Sanger placed as the third on his list, being preceded only by Leopold's two, while Sanger himself does not appear before the eighth operation. When I performed my first operation on October 6, 1882, I did not know that

¹ Garrigues; The Improved Cæsarean Section. American Journal of Obstetrics, 1886, vol. xix. pp. 1009-1022.

Sänger existed, and I did not know that Leopold had performed a similar operation, differing, however, from mine in so far as he cut off a slice one centimetre thick of muscular tissue on both sides of the incision in the uterus, which constitutes the only thing that appropriately can be called Sänger's operation, and which soon was given up. In an answer to my above-mentioned paper,¹ Sänger claims the peritoneal suture as his own. I, therefore, repeat that two American surgeons, S. S. Lungren, of Toledo, Ohio, and Moses Baker, of Stockwell, Ind., applied their sutures in Cæsarean section in such a way as to have peritoneal *surfaces* in contact with each other. It is true they used only one row of sutures, but Spencer Wells, in treating uterine tumors, used the double suture, and Kehrer did the same in Cæsarean section. They all did it and published it before Sänger. Far be it from me, however, to deny the value of Sänger's book in regard to Cæsarean section. His great merit was to protest against the indiscriminate use of Porro's operation. Instead of this mutilating operation with its enormous mortality, he sounded the signal for a return to the old conservative method. Living in America, and being a reader of the *American Journal of Obstetrics*, I have no doubt that I had read the article by Dr. S. S. Lungren,² on his two operations published a year before, and which, so far as suturing is concerned, were essentially cases of improved Cæsarean section. Lungren used five silver sutures in his first case (1875) and twelve horsehair sutures in his second (1880). He avoided the endometrium, and in closing his sutures he brought peritoneal *surfaces* in contact with each other.

I have performed three Cæsarean sections with some small variations, but in the chief features as described above.

The first operation was performed on October 6, 1882, a year before I introduced strict antiseptic midwifery in the New York Maternity Hospital. At that time we did not know anything better than a two per cent. solution of carbolic acid for hands, instruments, and sponges, and were far from scrubbing our hands as we do nowadays in preparing ourselves for an operation. I committed the error of carrying the sutures through the whole wall of the uterus including the endometrium. A drainage-tube was inserted into

¹ Sänger: *American Journal of Obstetrics*, June, 1887.

² S. S. Lungren: A Case of Cæsarean Section Twice Successfully Performed on the Same Patient. *American Journ. Obstet.*, 1881, vol. xiv. pp. 78-94

the cavity of the uterus and led out through the vagina. The incision in the abdomen was two inches above and three inches below the umbilicus. That of the uterus was also five inches long and reached neither the fundus nor the lower uterine segment. I did not turn out the uterus and used no compression of the cervix. I inserted twenty-four uterine silk sutures, half of which were deep, a needlessly great number. The abdomen was closed with ten silver sutures through the whole wall, and intervening silk sutures through the skin alone.

In my second operation, performed February 24, 1888,¹ the abdominal incision extended from one and a half inches above the symphysis pubis to four inches above the umbilicus—probably a needless length. The uterus was turned out, elastic compression of the cervix and broad ligaments was used. Four sutures were put in the upper part of the abdominal incision before turning out the uterus. Full antisepsis with bichloride of mercury and iodoform was used. The incision in the uterus was five inches. It had entered the lower uterine segment, which caused some bleeding, controlled by sutures. Six deep silk sutures were inserted, avoiding the endometrium and pulling the peritoneum in between the cut muscular surfaces. Eight peritoneal sutures were used. An intrauterine douche of hot solution of bichloride (1 : 10,000) was given to stop hemorrhage. The abdominal wound was closed with eleven deep and five superficial silk sutures.

My third case was operated on December 3, 1895.² In this case I used the technique described in the beginning of this paper.

The first operation was performed after the death of the child, on a cripple, who had a kyphotic pelvis, caries of the spine, old pelvic abscesses, heart disease, and many other ailments, and who was debilitated by a severe ante-partum hemorrhage. The water had drained off. The operation was performed in preantiseptic times. The patient died of sepsis fifty-two hours after the operation.

The second case was a healthy woman. She was operated on in the first stage of labor, with full *antiseptic* precautions. Mother and child did well.

The third case was treated according to the rules of *aseptic*

¹ Reported in full in *American Journal of the Medical Sciences*, May, 1888.

² A full report of this case is found in the *New York Clinical Recorder*, February, 1896.

surgery. The woman had already been in labor thirty-five hours, but had only been examined by my assistant, Dr. F. Conger Smith, and myself, with full antiseptic precautions. She went through her lying-in period as any other woman, and mother and child returned to their home in perfect health.

The Cæsarean section, like all obstetric operations, ought to be so simple that it can be performed by a good country practitioner. A woman with an ovarian cyst, or a fibroma of the uterus, may be sent hundreds of miles to be operated on by a specialist, but a woman in labor must, as a rule, be satisfied with the help she can get in the locality where she lives. The *modus operandi* I advocate is of this kind. No special instruments are needed; no unusual surgical knowledge or dexterity is required.

Another point in favor of simplicity is that it is conducive to rapidity, which is of great importance in an operation that to a large abdominal incision adds one of the pregnant uterus.

Having tried both methods in regard to operating *in situ*, and turning out the uterus before incising it, I am decidedly in favor of the latter. The few additional inches in the length of the abdominal incision are more than counterbalanced by the easy application of the constrictor and by the surer avoidance of the entrance of blood and liquor amnii, perhaps contaminated with meconium, into the peritoneal cavity.

A continuous suture of chromicized catgut was introduced as early as 1886 by J. Veit, in Berlin, and has been used frequently by Leopold, who is the chief leader in the improved Cæsarean section. Personally I would not run the risk of using it, and would not advise anybody who has not special guarantees as to aseptic conditions of his material to use it in this operation. Sometimes it does not dissolve as fast as one expects. Sutures of chromicized catgut have been expelled through fistulous tracts as much as four months after the operation.

To use a triple or quadruple continuous tier-suture on a pregnant uterus takes, many times, more time than to insert the necessary number of deep and superficial interrupted sutures. Another objection to it is the possibility of hemorrhage occurring after the constrictor is removed. If it becomes necessary to insert additional sutures, the continuous suture might be cut.

If the placenta is adherent, it must, in using the continuous tier-suture, be peeled off immediately, or several minutes must be lost

in waiting, while the deep interrupted sutures may be inserted in the meantime.

In most cases, perhaps in all, the uterus after the operation adheres to the anterior wall of the abdomen, but, far from being a drawback, I think this is an advantage, and has also in former methods been particularly aimed at. It contributes to the strength of the union of the uterus and prevents ventral hernia. In the course of time the adhesions become much elongated, and sometimes they probably disappear. In a second Cæsarean section on the same individual I have seen them form a band like the broad ligament, and Lungren found no adhesions in his second operation on the same patient.

IX. ABDOMINAL SURGERY.

4. VAGINAL HYSTERECTOMY.

By WILLIS E. FORD, M.D.,
UTICA.

THERE has probably been no surgical topic that has received more careful and more general consideration during the past year than vaginal hysterectomy. This has been partly due to the perfection of the surgical technique, which has made the mortality much less than even three years ago; and also to the fact that within the last year American operators have been very generally impressed with the many points of excellence urged in favor of the French operation with clamps as distinguished from what we call the American operation by ligatures.

While, primarily, the operation is urged in favor of cancer of the uterus, the attempt to include other conditions, such as suppurating disease of both appendages and uterus, has been stimulated by the accounts received from the French operators. No one doubts the utility of the operation in favorable cases of cancer, but it is pretty well established that even in this disorder extensive fixation and extension of the neoplasm into the adjacent tissues, with invasion of the rectum and bladder, forbid the operation even in cancer. I think it is conceded that most cases of cancer of the uterus that are operable at all are more safely so by the vaginal

route. There are many men who say that vaginal hysterectomy ought to be limited to cases of cancer alone. I would not go quite as far as that, but am well convinced that hysterectomy is not the elective operation for suppurative disease of the tubes and ovaries in the majority of instances. The argument that the uterus is a useless appendage as soon as the ovaries are hopelessly diseased, or have been removed by operation, never appealed to me in any degree. I have not seen cases in which the tubes and ovaries have been removed by abdominal section that seemed to me would have been improved by hysterectomy. In many such cases, instead of the menace to life, or to the usefulness of the woman, being in the uterine body, the cause is extrauterine; either because the diseased tissue has not been removed by the laparotomy, or because of inflammatory exudate which follows the operation.

Prejudice against hysterectomy on the ground that the woman was either mutilated so as to render her physical existence undesirable, or that her mental status was much changed, has been very largely removed by observation and by the testimony of those who have done the largest amount of this work.

As to the advisability of the operation for small fibroids—up to the size of a cocoanut—I am not at all convinced; if any operation is to be done, I believe vaginal hysterectomy to be the best; but I do not think it is justifiable to jeopardize life for that reason, unless the tumor is a hemorrhagic one, or is rapidly growing. This is true from the fact that not every small fibroid grows until it endangers life, or even interferes with the woman's usefulness; and also from the fact that means which do not jeopardize life may be successfully employed in these small growths.

I have seen a tumor removed by vaginal hysterectomy which was impacted in the pelvis and extended to the umbilicus. Aubeau, Péan's assistant, who performed this operation, said it was the extreme limit in size that could be reached by the vaginal route; and that he did it to show us what could really be accomplished by morcellation—admitting at the same time that abdominal hysterectomy would have been easier. It seemed to us Americans that abdominal hysterectomy would have been much easier, safer, and certainly much quicker, even with a tumor one-half this size. It must be admitted that just what cases are suitable for vaginal hysterectomy, and just how far this operation is justifiable, have not yet been entirely settled.

Ségon, at the Surgical Congress at Lyons, in 1894, discussed the feasibility of hysterectomy for tumors in the adnexæ, and advised it in bilateral disease, whether the masses found were cystic tumors, fibroids, or accumulations of pus. He advocated the vaginal route as safer than the abdominal one; though he did not deny that it was more difficult; at the same time he spoke of the greater difficulties in the way of the removal of the adnexæ by vaginal incision without removing the uterus.

Within the last year or two there have been advocates of this latter procedure, which seems to be growing in favor; but not for movable cyst tumors of any size. Abdominal section is still looked upon as being safer—and it is certainly easier. My own attempts in this line have been few, because the difficulty and danger seemed greater than by the abdominal incision, excepting where simple opening and drainage were all that was aimed at.

One cannot read Ségon's argument without feeling that hysterectomy is done in these cases—not to get rid of a diseased uterus—but to get access to diseased conditions above. This does not appeal to me as being a sound surgical principle. Much more will undoubtedly be done by vaginal incision in the future, and the logic would seem to be that in the same ratio hysterectomy without actual disease of the uterus, or attached tumor inseparable from the uterus, will decline. It is, perhaps, interesting just now to discuss the technique of the operation from the American standpoint, as compared with that of the French.

Vaginal hysterectomy, without ligature, relying simply upon clamps to control hemorrhages, was done early in this country, and pretty generally abandoned for the ligature operation; while the methods of using the ligature were improved until the operation in skilled hands became very easy and very safe. It seemed better to many operators to leave the ligature to slough, without attempting to close the vaginal wound at all; while others cut the ligature short and closed the wound entirely, or else left a small opening through which projected four or five of the main ligatures for drainage. Many of these cases, however, developed secondary abscesses, and did not get up any quicker than those in which the wound was left entirely open; and the danger of hernia was found to be almost nothing. The tendency of late has been toward free drainage, leaving the vaginal opening unclosed and loosely packed with gauze.

The danger from sepsis was certainly less, for it is almost impossible to place many ligatures without having some of them infected; especially is this true in pus cases. Where the operation was done in the presence of extensive sloughing surface, or in cases where the tubes contained pus, the danger of secondary abscesses, as well as of immediate sepsis, has always been considerable with a ligature operation.

When, therefore, last year Dr. Jacobs, of Brussels, read a paper in this country in which he reported 406 cases, with only thirteen deaths—all done without the use of ligatures or sutures—operators generally were very anxious to observe his technique. His claims in favor of the operation, that it was safer with clamps than with ligatures, seemed justified by his statistics; while it seemed reasonable that his operation could be done in less time. He frankly said, however, that it could not be done in America with American instruments; and I think he was entirely correct in this statement. His own peculiar clamp was so made that, in case abdominal section was necessary, the jaws could be caught by another set of handles, and the handles originally used for placing the clamps removed; but this seemed to have few, if any, advantages—and, indeed, I never saw it used, either in Belgium or in Paris, where I saw many hysterectomies last summer. With the exception of the use of this clamp, Jacobs's methods were identical with those of Ségond, the operator from whom he probably derived some of his ideas. They were exactly the same as those of Richelot, Aubeau, and Ségond, all three of whom I saw operate many times, so that it may properly be called the French operation. Though I had studied carefully Jacobs's paper, and had talked with him personally, and had seen him operate in his own hospital in Brussels, I did not appreciate thoroughly the technique until I had seen a score of operations done by Parisians.

The claims of superiority for this method over that of the ligature seem to me to be based on very rational grounds:

First, it is much quicker; and while this is essential of itself, it has an additional merit, that if the operation is prolonged for some unforeseen cause, such as the presence of adhesion, or the necessity for the enucleation of both appendages, with, perhaps, a fluid tumor attached, the whole shock will usually not be beyond the strength of the average patient to resist.

Secondly, the clamps may all be removed in forty-eight hours,

so that if any pus is held back of the clamps, or any necrosed tissue caught between the blades of the clamps, these dangerous elements are released by free drainage before the vaginal wound is closed. It is claimed that on this account not only is greater safety secured at the time, but also that the cicatrix is softer, there are fewer foci for collection of pus, and less scarred tissue in which malignant growth might afterward develop.

All this I believe to be true from the testimony of those operators whom I have named, and whose honesty and competency cannot be doubted, and also from my own observation of cases that I have operated upon by both methods. The two drawbacks are the inconvenience and discomfort by the presence of the clamps, and the danger of too free oozing. The former objection is not serious, for there is little pain produced by the clamps, if they are properly protected after the operation is finished. The second objection I believe to be a very great one; and in one case of my own done quite recently in an exsanguinated woman, who had extensive cancerous disease, destroying the neck, and extending into the body of the uterus, was sufficient added to the shock to cause death.

I have seen much oozing in cases in which the operation was done with ligatures, but this oozing, added to the fact that the woman was almost bloodless when the operation was done, seemed to me to be an element of great danger. I am convinced, however, that the use of gauze as packing is not so safe as the cylindrical cotton pledgets, which are used abroad. The French valves, traction forceps, scissors, as well as clamps, are equally necessary. The clamps have long been known in this country; and the specula, or valves used by Ségond, can also be found in New York. But neither the traction forceps nor the scissors have been made there, so far as I know, until the last month. These were patterned after the instruments which I brought home last fall.

The operation itself has been frequently described, but the descriptions failed to convey to my mind the essentials of the operation as performed by Péan, Aubeau, Ségond, and Richelot in Paris.

After the usual antiseptic precautions, which were most thoroughly carried out, a circular incision was made about one-half an inch up on the sound tissue extending across the front of the cervix, and a similar one on the posterior surface of the cervix, leaving an isthmus on each side for about one-quarter of an inch in length, corresponding to the base of the broad ligaments. With

a blunt, stout curved scissors, keeping very close to the uterine tissue, or actually into it, if sound, the dissection is carried up for an inch or more before and behind. Then, a finger and thumb are inserted and brought together, grasping the uterine artery, and the first clamp on each side is so placed as to include in the lower part of its jaw the sound tissue mentioned. The uterus is then cut away up to the end of the clamp and immediately split, and the lateral halves removed. This split extends a little higher on each side than the distal end of the clamps. Now, if there is no marked enlargement of the uterus, and no solid tumor, a large valve, wide enough to occupy the entire breadth of the uterus, is shoved under the pubis as far as the dissection will allow it to go. Then, with the scissors still close to the uterine tissue, the dissection is pushed forward, and the valve follows. Of course, the Douglas pouch has already been opened, which procedure very soon exposes an inch or more of broad ligament. This is seized on each side by another clamp, and the uterus again cut free, split up its centre, and the free segment removed. When the fundus of the uterus falls forward the valve is pushed in over it so as to keep the intestines entirely out of the way, and the last clamp is placed over both tubes and ovarian arteries, downward on each side of the broad ligament, including all the attachments remaining; the uterus is split its entire length, and each half cut loose from the last clamp.

Examination is then made for any disease of the tubes or ovaries, and these are steadily brought down if necessary, and additional clamps placed, and the diseased tissue cut away. The surface is then examined for any bleeding points, and extra clamps put on wherever necessary. Very little blood has been lost, the wound is wiped dry, the valves still remaining in. The posterior surface of the wound is then carefully packed with pieces of rolled cotton about three-fourths of an inch in diameter, and two and one-half inches long. The outer surface is dipped in iodoform, each piece having a string attached for its withdrawal; and layer after layer of these are carefully and firmly placed, the valves withdrawn, and the wound firmly packed. The handles of the clamps are then bound together and covered with gauze so as to protect them from the vulva, and the operation is completed.

In one case I opened the bladder, but closed the wound at once with a clamp; and though there was a little leakage of urine the first day, and what was drawn by catheter had some blood in it,

there was no other result, and the woman recovered without fistula. This clamp was removed in forty-eight hours together with the others. The opening into the bladder was so large that it admitted the end of my finger. This accident is avoided by more skill in the use of the stout curved scissors. With these no force need be used in separating the bladder—no peeling up with blunt instrument or finger—for we can get closer to the uterine tissue with these scissors, and, of course, there is much less oozing of blood when the separation is close to the uterine muscle, or actually includes a bit of muscle, as can be done where there is no malignant disease.

In cases of cancer the first step is to remove with scissors the diseased tissue as far as possible, often making a cup-shaped cavity of considerable extent, which is first wiped with pure carbolic acid, then packed with strips of iodoform gauze; the anterior and posterior lips then being caught with small traction forceps; the large heavy traction forceps are so placed as to join the lips and to seal up the cavity, and the operation proceeds as before.

After the first set of clamps have been placed the diseased tissue can, usually, all be removed. In cases of fibroid enlargements of the uterus, after the first clamps have been placed and the neck of the womb removed, the mass being too large to come down readily into the vagina, the tissue is split from before backward, as high up as the distal end of the clamps, and the small traction forceps are made to catch on each side of this groove, and the stout scissors are used to remove as much of the tissue as possible. As each forceps is thus cut away it is placed a little higher up, and the cutting or morcellation proceeds as before. In this way the interior of the mass is rather rapidly scooped out, so that finally the walls come together enough to allow it to descend, and the operation proceeds as in the case of a normal uterus.

When the tumor is very large, long curved knives are used for scooping out the interior of the tumor, in addition to the operation of removing the edges of the split surface by scissors as before mentioned. The use of the knife was resorted to only in cases of rather large growths. It seems to me that the skill in this operation depends more upon the judicious use of traction forceps and stout scissors than upon anything else. I venture to show these instruments at this time, because traction forceps are absolutely essential to this operation, and because in ordinary gynecological work they

are much more useful than the volsella we have been accustomed to use in this country.

By this method if a cancerous uterus was found to be so firmly fixed above as to make it wholly impossible to remove it, the operation must be discontinued after the diseased tissue is removed; and what practically amounts to a very high amputation is accomplished, more easily than by any other method. I have done this in two cases, leaving, perhaps, an inch of uterine tissue unremoved.

The danger of secondary oozing is undoubtedly greater than where ligatures are used. The very firm packing with the small cylinders of cotton, instead of the use of gauze to which I had been accustomed, must necessarily be an important factor in this operation.

Small ovarian cysts and pockets of pus, as well as conditions of encysted salpingitis, are most easily and successfully treated after the uterus has been removed. The fluids must be withdrawn with trocars; or, if they rupture and discharge, very little infection ensues, and the drainage is ample.

Much less douching with water was seen this summer than we have been accustomed to see in this country. The tissues are wiped dry, and a stream of water is not used, which might carry infecting material higher up. This I subscribed to as good surgery, because for more than a year in my abdominal operations I have avoided the general irrigation of the pelvis, even where pus has escaped at the operation. The intestines protected by pads and the infected surface wiped dry with gauze, followed by gauze drainage, have brought me excellent results.

So, too, I think that irrigation is a dangerous thing in this vaginal work, unless most skilfully managed.

The recoveries are undoubtedly more speedy after vaginal than after abdominal hysterectomy—two weeks being a fair allowance of time, while a patient may sit up in ten days. Jacobs has had his patients out of doors in a week. The shock is much less, and the convalescence is very satisfactory, and subsequent health of the patient is unimpaired.

X. ABDOMINAL SURGERY.

5. THE SLOUGHING OF UTERINE FIBROIDS AFTER ABORTION AND LABOR.

BY MATTHEW D. MANN, A.M., M.D.,
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THERE has been considerable discussion of the question whether fibroid tumors of the uterus predispose to sterility. Hofmier,¹ after studying a number of cases, concludes that in the great majority the tumors have nothing to do with preventing conception. This has never seemed to the writer to be the way in which to put it. I have always looked upon the sterility as being the cause of the new growths. I think it will be found that the larger number of fibroids, or myomas, occur in women who have either borne no children, or have only borne one or two, and these at a period remote from the occurrence of the tumors. Such, at least, has been my experience.

If this be so, then it may be that the sterility, as some one has said, antedating the fibroids, stands as the cause, and for the following reason: The uterus has implanted in it by nature the property of accomplishing upon a certain condition, namely, the presence of a fecundated ovum, a sudden and rapid increase in size. If this inherent tendency to growth be not given an opportunity of expressing itself in a natural way, by an enlargement during pregnancy, then it will manifest itself by irregular and atypical growth or growths.

Be this as it may, the fact remains that fibroids, occurring, as they generally do, in middle life, are comparatively rarely complicated by or complicate pregnancy. Still, some of the most remarkable cases have been reported where pregnancy has occurred notwithstanding the presence of an enormous number of fibroids of great size in the walls of the uterus, with marked lengthening and distortion of the uterine canal. When this occurs, the combination of fibroids and pregnancy sometimes induces a condition which may tax to the utmost the judgment and skill of the attendant. The

¹ Centralblatt, 1895, No. 1.

degree of danger to the woman and the necessity for interference, as well as the kind of interference, must depend upon the way in which the tumor has grown, its size and location.

Another fact to be considered is that in a pregnant uterus fibroids usually grow with great rapidity. The same formative activity which is imparted to the uterus by the presence of the fecundated ovum is also imparted to the tumor; so that a fibroid which has previously caused very little inconvenience may rapidly increase to such a size as to make its mere presence, plus the pregnant uterus, a serious matter.

Of late a large number of cases have been operated upon, mostly by abdominal section; but even a superficial study of recent literature will show that, although the best methods of our best operators have been brought to bear, the results have been far from good, and leave much to be desired in evolving a better method of treatment. I have no such improvement in therapeutics or surgery to offer, but wish to put on record the history of a few cases which may serve to aid in arriving at a more "learned guess" as to what should best be done under given circumstances, and when to do it.

The first point to consider is whether interference is necessary at all. In a number of instances I have seen a tumor in the lower segment of the uterus look, early in pregnancy, as though it might make the labor impossible. I have been astonished to see this same tumor, when the labor came on, get out of the way of the advancing head, ascending out of the pelvis as the child descended, thus allowing the labor to come to a successful termination. I have three times been ready to do Cæsarean section for fibroids in the pelvis, and each time the labor has been completed without any further interference than the application of the forceps.

A little more experience proves that the results are not always so favorable, and the statistics of a large number of cases show that the mortality where there has been no interference is very great. Staveland¹ has collected the records of 597 cases in which nothing was done until labor came on. Of these 220 died—a mortality of 37 per cent. In 548 cases, collected by the same writer, 15 per cent. aborted; and in 307 of these, in which the maternal mortality is noted, there was 12 per cent. of deaths. This would certainly show that in cases in which there is no interference the

¹ Johns Hopkins Bulletin, March, 1894, p. 33.

mortality is simply frightful, and would warrant the general statement that interference is usually justified. The percentage of deaths where abortion occurred is so much lower than where the labor went to term that the advisability of inducing abortion would seem also to be shown. Still, a mortality of 12 per cent. is very great, the mortality of ordinary abortions where they are properly managed being *nil*.

The danger after abortion, as has been proved by the records of many cases, comes principally from distortion of the uterine canal, making it impossible to entirely clear out the placenta and membranes. Small portions, being left, decompose and set up sepsis. Sepsis in a fibroid uterus is very much more dangerous than under ordinary conditions, because the same distortion of the pelvic canal which prevented the clearing out of the secundines also prevents thorough drainage and washing out with antiseptic solutions, and because the retrogressive changes, affecting the uterus and the tumor, as well after pregnancy, lower the resisting power and make the spreading of the infectious process to the tumor almost certain.

That sepsis does not necessarily occur from retention of the secundines, even under favorable circumstances, is shown by a case which I saw with Dr. G. C. Clarke, of Niagara Falls, a few years ago. The patient was a woman, about thirty-five years of age, who was pregnant, and had been known to have a large fibroid tumor for a number of years. The tumor completely filled the pelvic cavity, and pushed the cervix so far above the brim in front that it could not be reached. During the third month of her pregnancy she aborted. The foetus came away, but the doctor was unable to get at the placenta, and called me to consult as to the propriety of doing hysterectomy. Her pulse and temperature were normal; and I advised waiting and an operation should there be any indication of sepsis. This, however, did not occur, nothing more was ever seen or heard of the placenta, the patient's temperature did not go above normal, and she made a perfect recovery.

Such results as the first case must be the exception. Drs. Lusk and Kessler¹ had a similar case, but the patient died of sepsis; and the other two which I wish to report, like Dr. Lusk's case, did not have such a happy termination.

¹ British Gyn. Journ., 1894, p. 322.

The first case was that of a woman, aged thirty-five years, who had been married a number of years and had never been pregnant. She first came to me when she was in the second month, pregnancy having been diagnosed by her attending physician. The tumors were large and seemed to be increasing rapidly; she was very much disturbed about herself, and consulted me as to the best plan of procedure. I advised her to wait until about the fourth month of pregnancy, and, if the tumors kept on growing, we would then induce abortion. She was very anxious to bear a living child, but did not wish to undergo any excessive risk. I advised waiting, because I hoped in this way to obtain better involution and consequent subsidence of the tumors. Two months later she entered my private hospital. She was then in the fourth month, and the abdomen was distended to the size of the uterus at term. As it did not seem that it would be much longer possible for her abdomen to contain the tumor and the foetus, should they increase at the same rate that they had been doing, I decided that it was best to bring on an abortion.

This I found quite difficult to do; but, finally, uterine pains were started, and the foetus was expelled. The placenta did not come away, and I was obliged to remove it with my finger and the placental forceps. The finger could barely enter the uterine cavity, so that it was not of much use. A large intra-mural growth upon the right side of the tumor pressed upon the cavity and made it semi-circular. With the curette and forceps I removed all of the placenta that was possible, and then thoroughly washed out the uterine cavity. The patient did well for two days. Upon the third day the temperature went up to $101\frac{1}{2}^{\circ}$, and the next day it went above 102° , with a pulse of 120. Repeated douching of the uterine cavity kept the temperature below 101° for the next five days. On the tenth day, after a chill, it jumped up to 102.5° , the pulse to 110. It seemed to me then that the time had come when expectant treatment should cease. Both the patient and her husband had absolutely refused to allow an operation up to this time. They now reluctantly gave their consent, and upon the tenth day after the abortion I opened the abdomen. The moment I did so there was a very perceptible odor of decomposition. I found a large tumor attached to the body of the uterus by a pedicle as large as my wrist. The tumor was nearly black, and proved to be putrid all the way through. The intestines were not adherent to it, but

on the upper edge the omentum was firmly attached. The body of the uterus contained a number of smaller growths. I did a complete hysterectomy, washing out the abdominal cavity and using drainage. It was, however, too late, and the patient died within twenty-four hours after the completion of the operation. The growths with the uterus weighed nine pounds. An examination showed a long semi-circular uterine canal and a small piece of decomposed placenta at the upper angle.

The other case I saw in a distant city last summer. The patient was thirty-two years of age, recently married, and had not borne children. In the month of April she was found to be three months advanced in pregnancy. Her unusual symptoms led to an examination and the discovery of multiple fibroids, the largest the size of a foetal head at term. In May she had a slight hemorrhage, subsiding after a few days of rest in bed. By June 1st the abdomen was larger than at full term, but there were no pelvic pressure symptoms, and her general condition was good. Upon June 8th there was an escape of the amniotic fluid. On the 13th a five-months' foetus, partly macerated, was removed from the vagina. The placenta was found to be implanted at the fundus anteriorly, the lower edge overlapping an interstitial fibroid, the size of an orange, in the anterior wall. The removal of the placenta was accomplished with great difficulty, as it was soft and friable, and already had a slight odor. The uterus was washed out with bichloride solution and packed with iodoform gauze. From the 14th to the 16th of June, temperature varied from 100° to 101°. Upon the 17th, the third day after the miscarriage, the evening temperature was 103°; the odor very offensive.

The patient was then seen by Dr. Hunter Robb, of Cleveland, who examined her under ether, and thoroughly curetted the uterus. From the 18th to the 20th the high temperature continued, with chills. Intrauterine douches were used; there was no pain or tympanites. From the 21st to the 23d she seemed to improve, except that the lochia still continued offensive. Dr. E. C. Dudley, of Chicago, saw her, and advised hysterectomy if the septic symptoms did not abate.

On the 24th she had another chill. On the 26th was seen by Dr. William M. Polk, of New York. From the 26th to the 29th temperature varied from 100° to 101°; pulse, 100 to 110. No chills. Appetite and general condition better. A very rapid

diminution was noticed in the size of the uterus and tumors; the lochia continued very profuse and foul.

I saw her on July 2d, nearly three weeks after the abortion, she having had chills and high fever the day before. Examination showed fragments of sloughing fibroids hanging out of the uterus, evidently attached to the anterior wall, being the remains of the tumor which had been noticed at the time the placenta was removed. I advised operation, and was recalled by telegram to perform hysterectomy the following day. That night, however, she was taken with pneumonia at the base of the right lung. From July 4th to July 9th she was profoundly ill, with no marked pelvic symptoms. The discharge was scanty and much less offensive. On the 18th there were symptoms of gangrene of the lung. Dr. Roswell Park resected several ribs, draining the pleural cavity. The patient, however, was too far gone, and died ten days later of exhaustion. The autopsy showed a gangrenous cavity at the base of the right lung. The uterus and tumors reached the size of a foetal head; the peritoneal coverings were normal, and there were no signs of pelvic inflammation. A sloughing ulcer, of irregular and ragged base, was noted at the site of the sloughing fibroid. There was a general purulent endometritis.

In order to show that these cases are not unique I will quote from recent literature a few more of a similar nature :

Dr. Jacob Frank¹ reports a case where abortion was induced between the fourth and fifth months. It was found impossible to induce expulsion of the afterbirth, it being hidden behind the tumor. The temperature gradually increased, and the woman developed evidences of sepsis. Four days later the placenta was expelled spontaneously. The temperature still remained high, notwithstanding intrauterine douches. The tumor sloughed, and finally an abscess formed and opened through the abdominal wall; and through this abscess cavity the sloughing tumor was finally withdrawn, nature having accomplished its expulsion. The patient, after a long and serious illness, eventually recovered.

Dr. Barton Hirst² reports two cases, in the first of which two fibromata were removed from a puerpera six weeks after labor. The tumors offered no mechanical hindrance to labor, as they were attached near the fundus. After delivery the woman had

¹ *Annals of Gyn. and Pæd.*, vol. ix. p. 140.

² *Ibid.*, vol. v. p. 603.

the symptoms of an infected endometrium, and required vigorous antisepsis to conquer the alarming manifestations of septic infection. The symptoms finally abated, but a slight rise of temperature remained. The tumor was removed six weeks after labor. Two days afterward the patient had a normal temperature, and recovered.

In the second case there was a large fibroid reaching from the fundus of the involuted uterus to the liver. It offered no difficulty at the time of the labor; but directly afterward there were symptoms of sepsis. After waiting twelve days, and finding no abatement of the fever, the tumor was removed. The operation was not difficult. There were a good many adhesions, especially to the omentum, and there was free hemorrhage. The patient recovered perfectly.

Dr. Hirst concludes: "From these two operations and the observation of cases treated expectantly by others, in a number of instances with a fatal result, I shall always hold myself in readiness to operate on fibromata after labor, as soon as I can conclude that they are infected. The low vitality of these growths makes them peculiarly liable to septic invasion. Germs which the cells of the uterine body could conquer and destroy would survive if they once got access through the lymphatics of the womb to a fibroid tumor in or on the uterine walls."

Dr. T. J. Crofford¹ reports a case of fibroid tumor complicating delivery, in which the tumor sloughed. The patient was too weak for an operation at the time, but on the seventeenth day after delivery abdominal section was made. The growth was near the fundus, above the point at which the Fallopian tubes are given off. The appendages were removed and the abdomen closed. The patient recovered well from the abdominal section; but six days later septic symptoms became more formidable, the temperature going up to 106°. The lower portion of the tumor, as well as the whole interior of the uterine canal, was found to be in a septic and sloughing condition. Large portions of the tumor were removed through the vagina with scissors and knife, and the oozing surface cauterized with the thermo-cautery. The whole of the uterine canal was thoroughly curetted, irrigated, and packed with sterilized gauze. This procedure was repeated half a dozen times at intervals, until almost the entire fibroid tumor and a portion of

¹ American Journal of Obstetrics, September, 1893, vol. xxiv. p. 398.
Med N Y 13

the uterus were removed by morcellement. The patient eventually recovered.

It would seem from a careful consideration of these cases that the dangers from sepsis following an abortion where there are fibroid tumors is very much greater than ordinary. As has been so well explained by Dr. Hirst in the quotation already given, the tumors are very apt to become infected, and, if so, the infection of so large a mass must increase very materially the dangers to the patient. Had this fact been more fully appreciated in the two cases which I have here reported, earlier operation might have been insisted upon. In both cases the obstacle which so often thwarts our best endeavors, the opposition of friends, stood in the way. Nevertheless, this might have been overcome by more positive statements of danger threatened and probabilities of cure if an operation were submitted to.

In my own case I did not fully appreciate the danger of the sloughing of the fibroid; and, although I knew that I was not controlling the intrauterine sepsis, I felt that the patient might ultimately be able to successfully combat it as long as it was confined to the uterine cavity. This, however, was a wrong notion, for the intrauterine sepsis, as I now feel convinced, was almost certain to spread to the tumor, sooner or later, and, that being once accomplished, the chances of successful operation were very greatly diminished.

It seems to me, therefore, that one cannot too strongly state that, should sepsis occur in a uterus after labor or after an abortion, such a uterus containing fibroids of any amount or size, unless the symptoms subside very promptly under douching and curetting, a hysterectomy, or myomectomy, either by the abdomen or the vagina, should be undertaken at once.

It may be said that the number of cases reported in support of this view is too few. Perhaps it is. But is it not probable that many of the fatal cases in the large number collected by Staveland were due to the same cause? Unfortunately, we have not got the details of all the cases, and, therefore, are left somewhat in doubt. But certainly it is a fair supposition that sloughing of the fibroids took place in a certain proportion. At any rate, the mortality after abortion (12 per cent.) is so great that prompt and radical treatment would seem to be indicated. It may be urged that if the tumor be upon the inside of the uterus it may come

away by the process of sloughing, and that as long as there is good drainage there will be no necessity for interference. This, I admit, may sometimes be true. But the risks are so exceedingly great, and the opportunities for absorption so good, and the infection of distant organs is so likely to occur, that the expectant plan would hardly seem justified after sloughing has once been recognized.

In regard to cases after labor at term, the same indications would seem to hold. The greater dilatation of the cervix might make intrauterine operation more easy, and would certainly favor the clearing out of the uterine cavity and the successful treatment of a septic endometritis. Still, the dangers of puerperal sepsis are great enough under any circumstances, and the complications arising from the presence of a fibroid tumor would certainly make the dangers greater. While we cannot lay down any rules as to the necessity for hysterectomy, the added dangers which may arise from the sloughing of the fibroid should make us stand ready to do hysterectomy should the symptoms seem urgent.

It has not been my purpose in this paper to discuss all of the relations of fibroids to pregnancy. The question is a very large one, and cannot be discussed in so brief a time as is here allotted. I have only tried to illustrate by cases, and to state the dangers where sepsis exists in a uterus with fibroids after abortion and labor, and to throw out some hints as to indications for treatment.

DISCUSSION.

DR. W. GILL WYLIE, of New York: Opening the peritoneum was, until comparatively recently, a very dangerous operation, and must still be considered as involving some risk to life. We must always keep the latter fact clearly before us, and not allow any scientific interest or excessive enthusiasm to obscure it.

In deciding whether we shall open the peritoneum by the abdomen or by the vagina we must always do the operation which we believe will be the least likely to cause death. I would rather have 10 per cent. of my cases have ventral hernia and have 25 per cent. stay abed a month than increase the death-rate by 1 per cent. and have no hernias and get all of my cases out in two weeks. There are undoubtedly some minor advantages in the vaginal operation over the abdominal, but the operation which gives me the lowest death-rate will always be my choice when I can discover it. Battey's original

normal ovariectomy was done by the vaginal method, and Dr. Byford, of Chicago, has for many years advocated and practised removal of the tubes and ovaries by the vagina. But in this country, until within a little more than a year, almost all coeliotomies were done by the abdominal method, with the exception of removing the uterus, for cancer, by the vagina when not too large. In fact, our first practical success was by the abdominal operation. Twelve years ago some of us reduced the death-rate from 25 or 40 per cent. to below 10 per cent., and in the past five years as low as 1 or 3 per cent. in private practice, and 5 per cent. in public hospital practice, and have even done one hundred coeliotomies by the abdominal method without a death, taking all cases that came without selection; so that, as far as lowering the death-rate is concerned, we have little to gain by adopting the new French fashion, so ably and warmly advocated by some of our colleagues, of doing all, or practically all, of our coeliotomies on women by the vagina. Very few of us have done a sufficient number by the vaginal method to make a fair and definite comparison of the two methods, nor have we been doing operations by the vaginal method long enough to compare the final results with those done by the abdominal method.

I have so far done only a few over 100 coeliotomies by the vaginal method. It is true that I have had only one death, but 75 per cent. were selected cases done for cancer; whereas I have done about 1500 or more by the abdominal method without selection. Gradually I am increasing the number selected for vaginal operation, and will continue to do so as long as I get such good results; but unless the tumor or uterus to be removed is small, with the adhesions fairly within easy reach from the vagina, I will continue to employ the abdominal method.

By opening the abdomen we can with less risk of injury to the organs of generation make a complete diagnosis and leave undisturbed one or more organs and remove the others. I admit that we can examine an ovary or tube, or even remove it, by the vagina, and leave the others and the uterus; but we cannot do so with the same exactness and certainty as by the abdominal opening. It is true we can pull down adhesions from above the pelvic brim, and in most cases remove the uterus, but in many we must leave parts of the tubes and ovaries where these organs are friable and the adhesions are high; besides, we are liable to tear an adherent appendix vermiformis which is not infrequently found involved in adhesions about a right salpingitis and ovaritis, and are much more likely to tear or pinch and injure the intestines by the vaginal method in such cases than by the abdominal method. Nor can we make good any such accident. Therefore, un

less the mass to be removed is small and the adhesion low in the pelvis, I will continue to resort to the abdominal method.

In cases complicated by dangerous sepsis, or prolonged sepsis, which makes abdominal section very dangerous, I will, as heretofore, open the peritoneum by the vagina, and secure good drainage with the least possible risk of shock, etc. In some such cases I may in the future remove the uterus to insure more complete drainage; but when the adhesions are extensive and the patient's condition will permit of abdominal section, I will still select the abdominal method, and do the complete operation in preference to resorting to incomplete removal by the vaginal method.

In doing hysterectomy for fibromata and other solid or uterine tumors I will continue to select the abdominal method where the mass to be removed is too large to be readily removed by the vagina. My results by the abdominal method in the past five years in such cases have been too complete and safe for me to resort to morcellation for the removal of uterine fibromata by the vagina unless it be one of moderate size low in the pelvis.

Except in the early stage of puerperal sepsis, or sepsis starting from below, where I wish to secure early drainage to lessen the extension of sepsis, I would not select the vaginal route merely for diagnosis. Not infrequently for many years I have resorted to the combined method of operating in certain cases. Loosening the cervical and vaginal junction from below and tying the uterine arteries, I free the lower half of the broad ligaments and then open the abdomen and remove every part of the broad ligaments. This is especially useful in cancer cases where one desires a complete diagnosis and to entirely remove all of the broad ligaments. I have also removed the upper half of the vagina, by pulling it up and slipping back the bladder and ureters from above, more completely and safely than I can by the vaginal method. Now, my aim has been, and will be in the future, to adapt my operation to each individual case, and not to become over-enthusiastic about one method or any one operation and attempt to apply it to all, or nearly all, cases. What I am striving for is the lowest possible death-rate first, and after that the best results on the health and happiness of each one of my patients operated upon.

I am very happy to say that I have learned something and have already profited by the recent enthusiastic advocacy of the vaginal method of opening the peritoneum by our French colleagues; but, with all due respect, I must say that had our French brethren been as successful in abdominal surgery as the English, Americans, and Germans, they would to-day be doing a very large number of their vaginal operations by the abdominal method. But had they done so we would

not have been so completely saturated with the views of their warm and enthusiastic followers to-day, and we might have learned less to our advantage.

For some years to come the doctor trained in general surgery, and not so familiar in the daily use of the sense of touch by the vaginal route, will still prefer in most cases the abdominal method, and do his best work in that way; whereas the man who daily exercises his sense of touch by the vaginal route will naturally take to the vaginal method of opening the peritoneum.

DR. H. J. BOLDT, of New York: I shall limit my remarks to one of the papers—Dr. Ford's. Dr. Ford claims that it is useless to remove the uterus in disease of the adnexa when these can be removed without it. In my opinion the uterus should be allowed to remain only where the adnexa of one side are removed. It is an entirely useless organ when the adnexa of both sides have been extirpated. It is not only a useless organ; it is a dangerous organ, if uterine or pelvic inflammation is present. I can substantiate that statement by referring to the first vaginal hysterectomy for inflamed uterus, if I remember correctly, in 1888 or 1889; and it was also the first time the uterus had been deliberately removed for pelvic or uterine inflammation. That patient had been ill a long time, and could not be relieved until the uterus was removed. Since then she has been well. It is not always absolutely necessary to remove the adnexa in such cases, because they may be adherent so high and so firmly that it is impossible to remove them, and if not removed they will subsequently shrink. I may state here that I think the operation is uselessly done in about nine cases out of ten; that it is not warranted by the pathological conditions present. The cases in which we should resort to total extirpation of the pelvic organs are only those in which there is recurrent pelvic inflammation or multiple pelvic disease. Such cases are comparatively few. It is particularly in cases of suppurative foci in the pelvis, posterior vaginal opening repeatedly failing to effect a cure, and cases of rectal and vesical fistula forming, that removal of the pelvic organs is called for; and these are the cases in which it is necessary to use clamps—cases in which ligatures are entirely out of the question, because the uterus is so high up and so firmly fixed that it cannot be budged half an inch. The other class of cases, and from which the French have drawn their enormous mass of material, are cases in which the uterus is movable, in which there is only a moderate amount of inflammation of the adnexa and in the pelvis, and in which anyone with some surgical experience can effect removal by ligature.

Regarding the time of removing the clamps, it is not necessary that they remain on longer than twenty-four hours. I have rarely left

them on thirty hours. There is little danger of hemorrhage during the operation when limited to the class of cases mentioned, for the bloodvessels contract very rapidly, and the small points cease to bleed as soon as they have been packed tightly. I have not seen secondary hemorrhage.

Mention has been made of cancerous uteri fixed so that they cannot be moved. In my opinion it is not good surgery to attempt to remove the cancerous uterus when we cannot operate in perfectly healthy tissue. It brings discredit upon the operation.

With regard to the work which has been done by Dr. Jacobs, while all must recognize his great ability to do pelvic work, I wish to say in defense of American surgeons that I have had occasion to operate on a patient subsequent to an operation by Dr. Jacobs which was not quite successful. I have seen surgeons in our country do fully as good work as surgeons do abroad, and especially in complicated vaginal work.

DR. M. D. MANN, of Buffalo: With regard to operations on the intestine, I have tried a number of plans which have been suggested. While I have had success with the button in a limited experience, I must confess that my feelings are very strongly in favor of intestinal anastomosis by suture. I have not regarded the element of time as of quite as much importance as Dr. Vander Veer does. I remember one case in which I had a double intestinal resection to make and a hole in the bladder to sew up. Dr. Park was present, and I requested him to make one resection while I made the other. It was before the introduction of the button, and was done by suture. The patient was already in a state of shock, but stood the operation well. I have a number of times made intestinal anastomosis by suture, and do not remember having lost a case except the first one, that of a patient who was so far gone that there was little chance. So I think we can usually take the time for the proper approximation of the tissues and uniting them by suture. There are a few cases in which the button might be better, especially cases involving the gall-bladder. I use a modified interrupted and continuous suture, taking four continuous stitches, then interrupting and tying, then taking four more, and so on. In that way a great deal of time is saved over the method of tying each suture, while the danger is avoided of placing a continuous cord of silk around the gut.

With regard to Dr. Ford's paper, I have been interested a good deal the past year in vaginal work. Dr. Jacobs came to Buffalo, stayed with me two or three days, and operated, and I have operated a number of times since, with results in the main exceedingly satisfactory. Aside from the operation of removing the uterus, there are many

things which can be done through the vagina which formerly were not done in that way. The operation suggested by Dr. Henrotin, of Chicago, at the American Gynecological Society last year, of opening acute abscesses through the vagina, I have done several times, and have operated for several other conditions in the same way. But when it comes to removing the uterus for pus-tubes, that is another matter, and it may be a question whether it will secure a permanent place. The danger of causing intestinal fistula fully offsets the danger of ventral hernia and other dangers which have been attributed to the abdominal operation. In Dr. Jacobs's statistics there were a large number of intestinal fistulae, a condition demanding a serious operation for its cure.

DR. W. G. MACDONALD, of Albany: In connection with vaginal hysterectomy we often hear traction forceps spoken of, of the necessity for bringing the uterus down, and of interference from the presence of a large number of forceps. Now, vaginal hysterectomy can be done with very few instruments. By use of a forceps such as I show you, Eastman's, the entire broad ligament can be grasped, and you can proceed with your technique with little interference. The ligament can be pulled down with this hook while applying the forceps.

The cases which interest all are those of intestinal anastomosis, considered in Dr. Vander Veer's paper. For the general surgeon they are usually emergency cases, and require that something be done immediately. An example was the one related of umbilical hernia with gangrenous intestine, the general condition of the patient bad. Here the Murphy button seems of special value.

DR. A. H. GOELER, of New York: I think the popularity of vaginal hysterectomy depends entirely upon its novelty. It would seem this conclusion must be reached when one considers its numerous disadvantages as compared with the abdominal operation. I have studied the question fairly, and believe that the only thing in favor of the vaginal operation is that there is less shock because there is less exposure of the intestine. Quicker convalescence is claimed, and there is freedom from abdominal scar. Against vaginal operation is the fact that perfect asepsis is difficult to secure, the operation is liable to be incomplete, and very often is so; a number of forceps may be left hanging from the vagina, and where they seize tissue sloughing masses may form; viscera are more liable to injury; the ureters are extremely liable to be injured; hemorrhage is more difficult to control. Diagnosis is not facilitated, as is done on opening the abdominal cavity. There is danger of fistula, and extensive adhesions render the operation difficult or impossible. I repeat that, in view of this array of disadvantages, the popularity of the vaginal operation must depend entirely upon its novelty.

DR. J. RIDDLE GOFFE, of New York: In connection with Dr. Ford's paper I may say that I am greatly interested in the method of attacking disease of the Fallopian tubes through the vagina. It marks a new era. In attacking bilateral disease of the appendages, the question of removing the uterus arises immediately. I agree with those who believe that when both tubes and ovaries are hopelessly diseased the uterus is no longer of any use, and had better be removed with them. I find that the more radical operation does not increase the mortality at all, while it is easier to perform. If one attacks the tubes through a small opening in the *cul-de-sac* posteriorly, he is working at a great disadvantage; whereas if he gets the uterus out of the way, the field is cleared and the operation facilitated. There has been a heated discussion as to whether the uterus is a menace to the patient after the removal of the appendages. Within the last few months two cases have come to me six and ten weeks respectively after removal of the tubes and ovaries at the hands of expert operators, and both had high temperature and symptoms of septic infection. On careful examination I found the uterus in each case was full of pus. In one I have already removed the organ, and will submit the operation to the other patient on my return. We can no longer regard the uterus as an innocent organ after removing the appendages. In these cases the original focus of disease was evidently in the uterus, and it is very difficult to cleanse it.

The choice between clamps and ligatures usually depends on personal preference.

DR. A. T. BRISTOW, of Brooklyn: In connection with Dr. Vander Veer's paper I wish to say a few words as a general surgeon on the desirability of using mechanical means *versus* direct suture in intestinal anastomosis. While it is true that time is not always an element in saving the life of the patient, yet I am sure that there are cases which come under the surveillance of the surgeon in which, as Dr. Dawbarn has well said, "breathless speed is an element of success." Take such a case as the one Dr. Vander Veer cited, strangulated hernia, strangulation existing several days, gangrene present, perhaps also fecal extravasation and sepsis. Here the administration of an anæsthetic is in itself, no matter how short the operation, an element of danger. I believe that all methods of direct suture require much practice and skill. Halstead's, for example, where the point is emphasized that the needle must be passed down and catch the mucosa to bring it out—a step which must be repeated many times in order to do it with dexterity. It cannot be fully appreciated on the cadaver, but must be practised on the living subject. Even after much experience the operation is much slower than any of the mechanical

methods of anastomosis. It has been urged against the latter that subsequently there has sometimes been found constriction. This shows at least that the patient had survived the primary operation, which cannot be said of many of those subjected to direct suture.

DR. B. FARQUHAR CURTIS, of New York: I would add a word or two with regard to the question of intestinal resection, particularly in emergency operations. As the last speaker said, we must distinguish between cases in which the patient's condition is good and those in which the condition demands haste. Dr. Vander Veer's paper dealt chiefly with the latter class of cases. For the former class I believe the suture method is best, but for emergency cases we must have some method which can be completed in a few minutes. Of suture methods, the only one which allows that is, I think, broad lateral anastomosis, suggested by Dr. Abbe. It is not difficult to do the operation, and, although the incision is three or four inches long, it can be sutured in twenty minutes. But where the time is short and the surgeon's experience limited, the button may be the best way out of the difficulty. The use of such an instrument is not ideal, but as long as the mortality is not greater than from suture, and it certainly has not been, the button should continue to be used.

Two dangers connected with the use of the button have already been mentioned. One, which applies to gastro-enterostomy rather than to intestinal anastomosis, is the danger of its falling the wrong way. Thus far there has been no means devised for preventing that accident. Making the opening upon the posterior wall of the stomach will not prevent it, for in my case in which I selected this location for the anastomosis, the button nevertheless remained in the stomach. In herniotomy it could be prevented. In a case of anastomosis in the lower portion of the gut I attached a string to the button and passed it down through the anus, so as to assure withdrawal of the button after union should become complete. It succeeded. Another objection to the button is the fact that, if there should be an adhesion or constriction below the point of resection, it might become lodged there and cause complete occlusion. If there is any suspicion of such an obstruction it is best to employ suture.

DR. W. E. FORD: In reply to Dr. Wylie, I think his own statistics bearing on the comparative mortality of abdominal and vaginal hysterectomy speak well for the latter. I wish to speak against the employment of the term useless uterus. I do not want to see American operators come to the point of removing the uterus when there is nothing the matter with it, even though the appendages have been extirpated. I have seen at least half a bushel of uteri which had been removed when there was nothing the matter with them. I think

that is an outrage. There is no more reason why we should remove the sound uterus because we may think it useless than we should remove the male breast because it is not a necessity, or the penis after castration.

DR. ALBERT VANDER VEER: The papers of Dr. Ford and Dr. Mann are excellent, and I should be glad to discuss both if time would permit. In attacking fibroids the vaginal route is an excellent one when the tumors are situated low. But for true aseptic surgery in connection with diseased tubes and so on, I believe we had better go in above. Dr. Mann's paper has been to me particularly impressive in the fact that it has shown that our general practitioners and obstetricians, men occupying good positions in small villages, do not realize the importance of watching cases of pregnancy complicated by fibroids. When such cases die a certificate is made out of death from puerperal septicæmia, puerperal fever, or something of that sort, the physician not appreciating the fact that the primary cause of death was a tumor in the uterus. I thank the gentlemen who have discussed my own paper.

Dr. Vander Veer then demonstrated some drawings and instruments in connection with intestinal resection.

XI. DISEASES OF INTRAUTERINE LIFE.

By EGBERT H. GRANDIN, M.D.,
NEW YORK.

THE portion of this topic assigned to me by your President is that which relates to the effect of disease of the child-bearing woman on the fetus. When requested by him to prepare a paper on this subject, I confess I little realized the obscurity which surrounds it or the task of Sisyphus I had undertaken in endeavoring to sift from the mass of theory enveloping it sufficient that is known as fact to justify me in appearing before you at all. My own researches in literature and those which my colleague, Dr. Marx, has undertaken in my behalf teach me that very little of a positive nature is recorded bearing on this all-important subject. I take it that I am not desired to rehearse for you well-authenticated facts, but that I am expected, as a scientific man reading to a scientific body, to endeavor to add at least a mite to given knowledge. After summarizing for you the little of a definite nature which I find re-

corded in regard to disease of the woman as affecting the foetus, I trust when I venture, as I needs must, to theorize, that you will bear in mind the fact that it is in no spirit of dogmatism, but because I must theorize if I speak at all.

I shall not waste your time in dwelling on the well-known effect of high maternal temperature on the foetus, nor shall I mention more than thus cursorily the fact that a not infrequent result of such constitutional disturbance is the shedding of the ovum. Neither shall I refer at all to the vexed question as to whether impressions of the mother may be transmitted through the nervous system to the foetus—the so-called doctrine of maternal impressions. One would think that this latter doctrine, whatever the occasional strong proof offered, had long ago been exploded when it was certified that there existed no communication by means of nerve-filament between the woman and the foetus. I take it that I shall best succeed in interesting you, if perchance I do so at all, by dwelling, in the first place, on the acute and chronic diseases which experimental research and actual experience have proven in some way or another reach the foetus when the woman is affected, and in the second place by theorizing as to how these diseases are transmitted.

It is only in the lifetime of most of us here present that bacteriological research has enabled us to speak at all dogmatically in regard to the transmissibility of disease from the woman to the foetus. This is one of the fruits of the advanced stage where the science of medicine finds itself to-day, and who can predict the wonderful possibilities of research along the same line in the not distant future? Experimentation on gravid animals and sparse clinical observation in the case of woman prove that most of the acute infectious diseases may be transmitted to the foetus. Thus, to specify briefly certain of the individual diseases: Variola can undoubtedly be transmitted. Cases are recorded where the woman has had this disease and the foetus has been born bearing pockmarks; other cases where the woman has been exposed to the disease has escaped it, and yet the foetus has been born with it. Strangely enough, and something well-nigh impossible to understand, of twins, one has been covered with pockmarks and the other not; and, more curious still, immunization of the woman by vaccination has failed to protect the foetus.

Transmission of measles has only been exceptionally noted, but

then we must remember that this disease is one which rarely affects adults, since the vast majority have suffered from it in infancy. Yet the researches of Dr. Marx have resulted in six cases being found on record.

Intrauterine infection by scarlet fever is unquestioned, and the same holds true for erysipelas. In regard to the latter affection, it should be noted that in one recorded case the bacillus was found in the subcutaneous tissue of the foetus, and yet in neither the placenta nor the cord. Three cases have been recorded where remittent fever affected the foetus, in one the spirilla having been found. In two of the cases, one of which was witnessed by Dr. Marx, the woman had a distinct sensation of violent motion on the part of the foetus, as though it were having a rigor, shortly after she had a chill.

There is but one undoubted case on record of transmission of tuberculosis. This is not unexpected when we remember that markedly tubercular women are not prone to conceive. Septicæmia is transmissible, the cases where this has been observed being few ; but then since the development of the science of bacteriology we have rarely had the opportunity of seeing instances of sepsis developing before labor ; as these cases after labor are gradually becoming more and more infrequent, the fact is impressed on students that it is an avoidable disease where asepsis characterizes obstetric practice.

The facts in regard to syphilis are too well known to call for comment here. So far as concerns our present purpose, sufficient is the statement that a syphilitic woman, if she conceive at all, will necessarily infect the foetus; and further, if she become syphilitic while bearing the foetus, the chances are that the latter will become infected—a point to be remembered in our further argument.

In short, so far as my researches have carried me, there is but one acute disease which the woman is not liable to transmit to her child *in utero*, and this is anthrax. I can find no case on record where this disease has been transmitted, and the positive opinion is justified that such transmissibility has never been verified.

Having established the fact of the transmissibility of disease, we pass to the important question, and the one where theory of necessity steps in, as to how the transference is effected. Broadly speaking, disease is carried throughout the human body either through the

medium of the bloodvessels or by the lymphatic system ; that is to say, whatever the source of original entrance of the germ, whether by the alimentary canal or the respiratory tract, it is disseminated throughout the entire body, either through the medium of the blood or of the lymph stream. Now in the case of the foetus *in utero*, since, so far as we can determine, it neither breathes nor eats, infection must reach its system directly by either blood or lymphatic stream. Recalling for a moment the anatomy of the placenta and the well-established facts in regard to the connection of the maternal system to the foetal, we see that direct transmission of the disease from the woman to the foetus by either method is an impossibility, since there is no connection between the blood or lymphatic system of the one and that of the other. The placenta intervenes between the woman and the foetus, and direct interchange of material is precluded by the anatomical relation of placenta to uterus. The foetus, of course, receives its nourishment from the maternal blood, but indirectly through the interposing medium of the placenta. As far as researches testify, it is probable that interchange of material occurs in the intervillous spaces which constitute the boundary line between maternal decidua and foetal. Here the activity of the blood-current is very marked and the conditions which favor interchange are most favorable. Either, then, material—nutrient or toxic—reaches the foetus through the medium of these spaces by a simple transfusion or else by migration of leucocytes. It seems to me that, in the light of modern data in reference to the germ-bearing capacity as well as germ-destroying faculty of the leucocytes, we must rationally look to them as the carriers of disease from the woman to the foetus. This explanation, further, will be seen best to accord with certain facts which have been established in regard to conditions under which disease is apt to reach the foetus and as to when it is not.

All investigators into the question of the transference of disease from the woman to the foetus are agreed as to the important rôle played by the placenta and the intervillous spaces. It has been accurately established that a *sine qua non* for the transmission of disease is a diseased state of the placenta. Take, for instance, certain facts established in reference to syphilis. It has been noted that where a woman becomes infected at the time of copulation, syphilitic foci often develop in the maternal portion of the placenta, leading to a placental endometritis. Thus, then, a healthy ovum

becomes infected because of the similar infection of the placenta. Again, it has been established that where the woman is syphilitic before conception occurs, or else where she becomes infected shortly after conception, where the placenta remains unaffected, the foetus escapes, and *vice versa*. Again, it has been proven that where the woman does not become infected until after the seventh month of gestation the placenta escapes infection and the foetus as well. All these facts go to prove that a healthy placenta offers a barrier to the transference of disease from the woman to the foetus. Similar investigations in regard to the placenta in case of other diseases from which the woman is suffering at the time of conception, or which affect her during gestation, certify to the truth of this assertion in reference to the safeguard against the entrance of disease into the foetus offered by the interposition of a healthy placenta.

The theory, then, which fits known facts, and which we must at the present day accept, is that which credits the leucocytes with transmission of disease from the woman to the foetus. Given an instance where the woman is in health at conception and for a certain period afterward, and the chances are that the placenta intervening between woman and foetus is healthy. Now, let this woman become diseased, and at once the leucocytes in her blood system carry the infection to the intervillous spaces. Here they are met by the barrier against disease established by the healthy placenta. This placenta contains healthy leucocytes with the property of resisting the entrance of disease germs. The phagocytic action of these healthy leucocytes comes into play, destroys at once the leucocytes bearing disease, and thus the foetus is protected.

Given, on the other hand, a woman diseased at the time of conception, or becoming so shortly afterward, that is to say, at a period when the placenta is in the course of early formation, then either we have at the outset a diseased placenta or one which becomes diseased as it is forming. Such a placenta contains either no healthy leucocytes, or else they have but feeble resisting powers. The barrier interposed by the placenta is, therefore, ineffective to an absolute degree, or else the leucocytes within it resist feebly or strongly according to the intensity of the disease-process, endeavoring to gain access from the side of the woman. In this latter event disease is transmitted to the foetus because the disease-bearing leucocytes from the side of the woman are stronger than and overcome the leucocytes in the placenta.

The question we are now considering is possibly not so difficult of solution where the woman is affected by a disease such as tuberculosis or syphilis at the time of conception. If this woman conceive at all, it is not improbable that the ovum at the time of insemination contains the germs of such disease, or, at any rate, in case the ovum should perchance be healthy, then we might consider that the uterine mucosa where the placenta must engraft itself and develop is diseased. In such an event the foetus may be said to be diseased from its very start toward life, or in life, since we must look upon the germ of life as present from the very date of insemination. Such a foetus dies early and is shed early from the very fact of death due to the disease from which the woman is suffering. The data we possess in regard to early miscarriage prove its great frequency under the condition we are considering. Here disease is transmitted to the foetus from the woman because of the existence of such disease in the woman prior to conception.

The limitations of our as yet finite powers of observation and of analysis do not allow us to prove this assertion, for who can examine the ovum at a stage when it has but become endowed with life, and who as yet is able to do more than to theorize in reference to the constitution of the germinal area, whether it can contain the germ of disease and still grow, or not? All that we are justified in doing, therefore, is to theorize, and I can but submit that the theory I have stated rests on a basis of probability.

The limitations of theory are about as absolute when we face the question of the transmission to the foetus of the disease which the woman has acquired during gestation. In such an event, as we have noted, a *sine qua non* appears to be the presence of a diseased placenta. We must assume, then, that in instances where transmission occurs the soil in which the placenta has developed was diseased before conception: not sufficiently to lead to a placentitis inconsistent with foetal development, but yet of a high enough grade to interpose a very feeble barrier to the leucocytes from the side of the woman bearing the germs of the disease which has attacked her during gestation. When we remember the frequency with which the milder grades of endometritis are met with in women who nevertheless conceive and carry the foetus to term, it is not improbable that the vast majority of women do not possess an ideally healthy placenta—that is to say, that in the average woman

the conditions exist at the placental site which enable the transmission of disease from woman to fœtus to occur.

Such, Mr. President, are the slender facts tinctured with weighty theory which I am able to offer. I regret that much thought and research have not enabled me to penetrate deeper the gloom which enshrouds this important topic. But, even as we note the growth and death of the flowering plant, without the ability to solve all the elements which enter into the marvel, even so, when endeavoring to elucidate a question dealing with a greater marvel, still—the history of life in man before life, such as we know it, begins, can any one wonder that theory prevails and fact has stringent limitations?

XII. SOME REMARKS ON URÆMIA AND ECLAMPSIA.

By P. W. VAN PEYMA, M.D.,
BUFFALO.

MY paper might properly be entitled “Some Remarks on Uræmia and Eclampsia.” It will be limited to a short consideration of the etiology, pathology, and treatment of these conditions as occurring during pregnancy, labor, and the puerperium.

In explanation of my change of subject, I may say that not having given any special attention to “diseases of intrauterine life on the part of the child,” and not wishing to present simply a compilation, I asked the privilege of choosing a subject, the presentation of which might be based, to a considerable extent, on personal observation and thought. During the last eighteen months I have seen nine cases of eclampsia, and about the same number of cases of uræmia, presenting serious symptoms, both renal and general in character. In several of the latter premature delivery was induced on account of the alarming character of the symptoms.

ETIOLOGY AND PATHOLOGY. The most generally accepted belief regarding the nature of these conditions is that they are due to various toxic agents—that they are toxæmias, due either to the accumulation of ordinary excrementitious products or to the formation of pathological toxic material; and, further, that these toxins act upon the nervous system, producing the well-known symptoms of headache, disturbances of vision, epigastric pains, convulsions,

and coma. As a predisposing cause, we recognize the increased nervous irritability of certain individuals, and of the pregnant state in general. That the toxic agents induce the convulsive seizures by first exciting a spasm of the arterioles, and a consequent anæmia of the nervous centres, is quite generally accepted. The sudden occurrence of anuria has been attributed to a similar spasm of the arterioles.

The more limiting and exclusive theories of œdema of the brain, the toxic properties of acetone, the mechanical theories of pressure on renal vessels and ureters, etc., have received less acceptance. In four autopsies seen within the last year neither cerebral œdema nor evidence of pressure on the renal vessels was recognizable. The permeability of the ureters was shown by pouring water into the pelves of the kidneys and allowing it to flow into the bladder. In no instance was any obstruction noticeable. One of the ureters showed a slight ecchymosis on its external surface, otherwise nothing pathological was found in this connection. In only one instance did the kidneys show unmistakable evidence of nephritis. In one case the liver was the seat of pathological change, the microscopic appearance being that of fatty degeneration in patches.¹

Among the more recent views regarding pathology, we may notice those of Jurgens as to the occurrence and causative agency of hepatitis hemorrhagica ; the occurrence of the liver-cell emboli (Jurgens and Klebs), the theory of ptomainemia, and the existence of a special bacterium, first suggested by Delone, and maintained by Favre and Hergott ; also the similar theory of Doria ; and, lastly, the theory of Schmorl, who, claiming to have observed numerous obstructions of vessels by emboli formed of placental cells, attributes the symptom of eclampsia to coagulation processes induced by the placental cells, which have entered the circulation ; or, in other instances, the development of disease processes in the placenta itself, with resulting production of toxins, and subsequent entrance into the circulation of these coagulating agencies.

In the October number of Virchow's *Archives* is an interesting report by Dr. Leudsen, of Marburg, of two autopsies following death from eclampsia. These examinations were unusually com-

¹ The autopsies were made by Dr. Herbert Williams, pathologist of the University of Buffalo, and to him I refer for further particulars.

plete, and included careful microscopical investigation. The conclusions are as follows :

“ Nothing was found to indicate an infectious (or bacterial) origin of eclampsia ; ” in all probability the condition is one of toxæmia.

Of the various organs, the kidneys show the greatest pathological change.

The multinuclear cells found in the lungs (first described by Schmorl) exactly resemble so-called placental cells, but their existence is to be considered neither as cause nor effect ; emboli of this character are to be considered as of accidental occurrence. A coagulating effect of these elements could not be determined ; nor was it possible to establish the production within the placenta of coagulation-producing toxins.

Liver-cell emboli were not found, although carefully looked for ; the very moderate necrosis of liver parenchyma found cannot be considered as a causative factor in the production of eclampsia ; the hyaline capillary thrombi, found in the lungs and the liver, are not characteristic of eclampsia, and are to be looked upon as secondary, probably due to a specific toxæmia ; they stand in intimate relation to the production of pulmonary œdema and the hyaline coagulations within the alveoli. That these hyaline casts are due to fibrinous metamorphosis of the alveolar epithelium could not be determined.

The record of my autopsies, as well as those of others, shows that we may have serious uræmic convulsions and death with but little or no recognizable renal lesion. Experiments have shown that certain dialyzable albumins or perverted excretory products may, as well as bacteria and many other agents, cause a degeneration of renal epithelium. In these cases the kidney lesion is not primary, but secondary—an effect rather than a cause. By its degeneration the vicious circle is completed. It is well to remember, however, that the kidneys, like other organs, can accomplish much more than their physiological norm, and that so long as they do their work uræmic accidents are highly improbable.

The accumulation of toxic products may be due to increased or perverted production, to diminished elimination, or to a combination of both conditions. Our present knowledge would seem to warrant the belief that in so-called uræmia we may have either of these conditions.

In continuing to use the term "uræmia," we no longer mean to imply that urea is the toxic agent. Regarding the nature of the toxins, it is established that they are both varied and numerous. The injection into the circulation of normal urine in sufficient quantity causes myosis, fall of temperature, and death without convulsions. Various pathological urines, however, produce convulsions before death. Jaundiced urine is especially toxic. In the case of eclamptics the urine is less toxic, while the blood-serum is more so than normal. In a certain case of eclampsia Chamberlent found the serum about three times as toxic as that of a healthy person.¹ The urine of waking hours is more toxic than that of the sleeping state. If this is to be interpreted as an accumulation of toxic material during sleep, it would explain the not infrequent occurrence of convulsions during sleep in the early morning hours. Of this I have seen two examples, both cases fatal.

Bouchard has succeeded in more or less perfectly isolating seven of the toxic constituents of urine. Of these urea is but slightly poisonous. It has been shown that the dose necessary to kill is enormous—being ten times more than the whole amount found in cases of profound uræmia so-called.² Much more important are the extracts (including the coloring matter) and the potassium salts. Each of these ingredients possesses its peculiar toxic properties.

Salivation, diuresis, myosis, fall of temperature, convulsions, and coma are the principal symptoms observed. The alcoholic extract causes diuresis, salivation, and coma; the residue, non-alcoholic, is evidently much more toxic; it produces myosis, fall of temperature, and convulsions. The potassium salts, especially the bicarbonate, even when but slightly in excess of the normal, produce convulsions and death. The alkaloids are not especially toxic. These facts enable us to explain how varying combinations of these agents may produce varying clinical pictures—how in one convulsions, in another coma, and in a third mental excitement may be the characteristic symptom. It is also possible that we may find in the existence of the alcoholic extract an explanation of the salivation of pregnancy.

¹ Ludwig and Savor, assistants in Chrobak's clinic, report similar results.

² Urea has even been recommended as a remedial agent on account of its diuretic properties.

As to the sources of the toxic agents, disassimilation or the production of excrementitious material, both normal and perverted, would seem to be the chief. The ingestion of food, with its changes in the alimentary canal, must also be considered ; and, lastly, the perverted functional activity of the liver appears to be of considerable importance. That the liver acts as a guard against the absorption of toxic material is generally recognized, as also that, by virtue of this function, it frequently becomes itself the seat of degenerative processes. Like similar conditions of the kidneys, degenerations of the liver may be both cause and effect in the processes under consideration. Jaundiced urine, as has been said, is exceedingly toxic, and bile is said to be six times more toxic than urine. In the pregnant state we must, of course, also consider the fœtus as an additional source of waste products and an added source of danger to the mother.

TREATMENT. In conformity with the views expressed, rational plans of treatment have aimed at removing toxic material by all possible channels. Catharsis, diaphoresis, venesection, and diuresis, as well as oxygen and dry fresh air for inhalation, have been recommended and employed. Where the case has been considered one of copræmia, intestinal antiseptics suggest themselves, and I have seen a case where their administration was followed by rapid improvement. Here also milk diet has a double indication.

Recent experiments have thrown much doubt on the efficacy of the vicarious action of the different emunctories. It is claimed that a serous diarrhœa removes only a hundredth part of the urea contained in an equal volume of urine, while sweat removes a still smaller proportion. In the case of the extractives the relation seems to be different, and according to Bouchard 280 grammes of a liquid diarrhœa remove as much as 100 litres of perspiration ; and the same is accomplished by the removal of only 32 grammes of blood. Theoretically, then, venesection would be indicated on this ground, as it has been recommended on other hypotheses.

That venesection is not always curative is well known, and is seen also in the cases where no improvement follows post-partum uterine hemorrhage. On the whole, practical experience has not maintained the hopes raised by theoretical considerations and experiments on animals. Certainly it should be limited to those cases where the condition of the pulse is no contraindication. Porak, Ferre, and Calderini have recommended the inter-cellular

injection of large quantities of normal salt-solution, on the principle of diluting the toxins, quieting the nervous system, and promoting polyuria. At the September meeting of the American Association of Obstetricians and Gynecologists, Dr. Lamphear, I am informed, reported exceedingly favorable results in a large number of cases treated by the intravenous injection of this solution. At the first favorable opportunity I shall try a combination of venesection with subsequent saline injections. On theoretical grounds, this would seem to offer a double advantage.

With bleeding the patient into her own veins, as the use of *veratrum viride* has been styled, I have had considerable experience; and I believe that, where the strength of the pulse warrants its employment, it is a useful agent. I have never seen the convulsions continue after the pulse had been brought down to 60 per minute. Yet notwithstanding this, the patient frequently dies.

My experience with pilocarpine has been unsatisfactory. Its depressing effect on the heart is unfortunate and dangerous. It is my opinion that many cases of eclampsia die from over-medication. With *veratrum*, pilocarpine, chloral, and chloroform all employed in one case, as they sometimes are, we need not wonder if the heart fails and the patient dies.

The administration of morphine, chloral, chloroform, and other remedies employed to lessen nervous irritability and to relieve vasomotor spasm, for want of time I only notice in passing. Veit's results with morphine cannot fail to attract attention.

Great diversity of opinion exists regarding the advantage of immediate delivery in cases of eclampsia. In this country the tendency is strongly in its favor. In Europe also Duhrssen has urged "accouchement forcé" with incisions of the cervix. Others have not been able to obtain as favorable results as he reports. In Vienna, and at the Royal Maternity, Dresden, under Leopold, active interference was not favored, as a rule; at the time of my visit five years ago. While the chances were considered rather better with the uterus empty, yet this slight advantage was deemed to be more than counterbalanced by the irritation and shock of active interference. It has been suggested that Duhrssen's results are to be attributed to the hemorrhage incident to the incisions and labor rather than to the emptying of the uterus. My practice has been between the two extremes—inducing labor where the ordinary treatment has failed to control the convulsions.

CASES. The question that has interested me very much of late is that of inducing labor in case of uræmia where eclampsia or other dire results seem threatening. To illustrate the responsibility and the difficulty of arriving at a decision, I briefly draw on my recent experience.

Mrs. H., totally blind in one eye, as the result of a former albuminuric retinitis occurring during pregnancy, was again pregnant about five to six months. The old condition returned, and I was informed by a well-known oculist that the remaining eye was rapidly becoming blind. In spite of treatment the condition grew worse, and after waiting as long as I dared, labor was induced at about the twenty-sixth week. Unfortunately, twins were born. Both were born alive, and I had some slight hope of their viability. Both, however, died within twenty-four hours. The patient's condition immediately improved, and her eye is now perfectly well. In reporting this case to the Buffalo Academy of Medicine, one of the members accused me of being a double murderer. On the other hand, the patient persists in thinking that I was a friend in need.

A second case was as follows: Mrs. —, the married daughter of a physician, a primigravida, seven months advanced, had a convulsion while alone in the house, falling against the stove. An errand-boy, calling at the house, and noticing her blackened eye and dazed condition, informed the neighbors. The patient was placed in bed and immediately had a second convulsion. Consciousness returned, and she did well for a week, when she had a third convulsion. From this time until natural delivery, about two months later, she had occasional headaches and other suggestive symptoms, but no convulsions. At no time could more than a trace of albumin be found. The total quantity, specific gravity and amount of urea, diet, and other circumstances considered, were fairly satisfactory.

There was no history of epilepsy.

A third case, seen in consultation, was one of unusual interest. Mrs. —, about thirty years of age, weighing about one hundred and twenty pounds, the mother of two children, pregnant since June 11th, was visited by her physician November 26th. She presented œdema of face and limbs. From this time until labor was induced, January 14th, the urine was examined almost daily; quantity large and gradually increasing until it became five or six pints

daily; specific gravity 1009 to 1011; urea 150 grains, 10 grammes; albumin gradually increasing until settling from one-quarter to one-third the height of urine in tube—casts hyaline, granular and broken down epithelial. She was placed on Basham's mixture, milk diet, sweats, etc.

Gradually nervous symptoms of doubtful character, such as transitory headache and nervousness, especially at night, with insomnia developed. Fears were also entertained that the condition of the kidneys might become permanent. Notwithstanding the gravity of the condition, I advised delay until the child should be more certainly viable; but the desires of the family, to whom the matter had been explained, and the counsel of a third physician, prevailed, and labor was induced January 14th, the period of pregnancy being twenty-eight weeks and two days. A living child, weighing three and one-half pounds, was born and continues to live. The third day after delivery 510 grains of urea were passed, and at present the average is about 300 grains; albumin is rapidly disappearing; quantity of urine continues about five pints. If the child should continue to live, the treatment will be vindicated.

In a fourth case labor was induced about two weeks previous to full term, on account of alarming symptoms. The patient had suffered from convulsions during the previous pregnancy, about a year ago, and had been delivered prematurely, about the seventh month of a dead child. In this case, a living child, and healthy, was born. As the head was passing over the perineum patient had two convulsive jerks of the entire body. She has made a good recovery.

In conclusion, I desire to emphasize the great importance of this subject. Since the advent of aseptic methods, and with it the possible prevention of infection, eclampsia remains as the chief source of unavoidable mortality in child-bearing women. In a general way, it may be said that one in three hundred of women who bear children dies from eclampsia. In the way of prevention much can be done by regulating hygiene, by frequent examination of urine, and by informing the family regarding the premonitory symptoms. That eclampsia may occur without premonitory symptoms is admitted, but authorities agree that the occurrence is extremely rare. The importance of this suggestion and the insufficiency of urinalysis alone were illustrated in a recent case. A primigravida devel-

oped convulsions ; the urine was loaded with albumin ; previous examination, the last one five days before, had discovered nothing abnormal. Had the warning of a severe headache, lasting about twelve hours, been recognized and heeded, the attack might have been averted. In view of our present knowledge, it would seem that especial importance must be attached to the quantity of urine and the specific gravity, as showing the total amount of solids—the presence of sugar being excluded. In estimating the sufficiency of urea and solids generally, allowance must of course be made for diet, exercise, weight of individual, etc. Flint, in experiments upon himself, found that on an animal diet he excreted 53 grammes of urea ; on a mixed diet, 32 ; vegetable, 22 ; and non-nitrogenous, 15.

In view of the toxicity of potassium salts it would seem that the common practice of administering the bromide and bitartrate should be discontinued. Further progress in our knowledge regarding the conditions under discussion undoubtedly will be in the line of what may be called physiological chemistry and in carefully made autopsies supplemented by microscopical research. The ordinary macroscopic examinations are of but little value. The determination of the prognosis of the kidney affection in given cases offers an important field for research.

I thank you for the opportunity of addressing such a representative body, and hope that this paper may have accomplished its chief object—that of exciting renewed interest and investigation and thought toward the solution of this serious and momentous problem of obstetrics.

XIII. THE QUESTION OF PUERPERAL SELF-INFECTION.

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PUERPERAL self-infection, in the sense in which the term has come to be used, refers to infection from bacterial organisms primarily present in the genital tract. It is contra-distinguished from contact-infection in which the causative agent is conveyed to the patient during the lying-in period. The conception, how-

ever, is an unfortunate one, since all infection is primarily from without. It finds no place in surgery, and it is no more essential in obstetrics. Ovarian abscess, pus-tubes, suppuration of the vulvo-vaginal glands, or other pus-producing disease pre-existing in the pelvis may be the source of puerperal fever; but the patient in such cases is already an infected patient, and the puerperal disorder is but the extension of the local septic process. Fortunately, with the exception of vaginitis, the concurrence of parturition and pelvic suppuration is rare. Even the disease-producing bacteria of the vagina are exotics. The term autoinfection, therefore, if used at all, has no proper application in its etymological sense.

The subject assigned me for discussion would be better stated "The Relation of Pus-producing Germs Primarily Present in the Body of the Pregnant Woman to Childbed Sepsis." The important practical part of the question concerns the vaginal secretion, since upon this hinges moot points in treatment, and to this my remarks will be confined. Is the average lying-in woman liable to infection from the bacterial contents of the vagina? It would seem primarily that she is. The vagina, like other open-body cavities, is exposed to the invasion of the pathogenic germs. The gynecological surgeon treats the vaginal surface as he does the skin; he prepares the field with no less care here than in abdominal operations. Must the obstetrician pursue a similar practice?

The bacteriological literature bearing on the relation of the vaginal secretion to puerperal sepsis is a voluminous one. The views and findings of different observers are conflicting. Essentially, three opinions prevail:

1. That the vaginal secretion may infect, whether healthy or diseased.
2. That only pathological secretions can infect.
3. That the vaginal bacteria, either in health or in disease, have practically no part in the etiology of childbed fever.

Of extreme autoinfectionists, Ahlfeld is a well-known example.

He declares (*Zeitschr. f. Geb. und Gyn.*, Bd. xxvii. H. 2) that pathogenic micro-organisms are always present in the vagina and in condition to take on virulence when a favorable soil is provided by the decomposing discharges following labor. Every obstetric patient, therefore, he contends, is liable to infect herself. With him in this opinion are Kehr, Kewski, Kaltenbach, and others.

Prioleau (*Arch. de tocol. et de Gyn.*, 1894, No. 1) maintains that

childbed fever may occur from pre-existing micro-organisms in the genital tract in certain conditions of the mother or of her environment which favor sepsis. In bad general health and under exposure to a vitiated atmosphere, the puerperal woman, he believes, may become septic from her own vaginal secretion.

Walthard, in a recent paper (*Arch. f. Gyn.*, Bd. xlvii. H. 2), relying mainly on culture-tests, found strictly normal vaginal secretions in but 14 per cent. of pregnant women. Streptococci were present in 27 per cent. Even the normal secretion, he declares, does not, as claimed by Döderlein, necessarily prevent the growth of pyogenic germs. The streptococci, like those found on mucous membranes in other portions of the body, are not virulent, but saprophytic on healthy tissues. Yet in certain conditions of diminished resisting power they may be the cause of puerperal fever. Other pus-producing organisms are frequently present, and, under like circumstances, may give rise to septic processes.

Inoculation-experiments on animals at the hands of several observers using pathological secretions have resulted in suppuration. Like results, too, have been alleged for similar experiments with normal vaginal secretions.

Döderlein, after restudying the question in a series of observations upon nearly two hundred cases (*Des Schneidensekret*, Leipsic, 1892), distinguishes normal from pathological secretions. The former, he contends, contain only fission fungi and are innocuous. Pathogenic bacteria, he declares, do not live in the healthy vagina, the normally acid condition of the secretion, which he attributes to an acid-producing bacillus, being not only inimical, but fatal to them. In diseased conditions of the vaginal mucosa its secretion may infect. Here the acidifying bacillus disappears, and wound-infection germs abound in active and virulent form. Clinically, healthy are distinguished from morbid secretions by their reaction to litmus as well as by their gross appearance. In health, the reaction is strongly acid; in diseased conditions of the vaginal mucosa, the reaction is either alkaline, neutral, or feebly acid. The latter observation is confirmed by Williams, of Baltimore.

Burkhardt (*Arch. f. Gyn.*, Bd. xlv. H. 1), examining one hundred and sixteen cases, indorses in the main the opinions of Döderlein. He could not in all instances, however, draw the line so sharply between normal and pathological conditions. In about 4 per cent. the question remained in doubt.

Similar views are held by Winter, Ott, Czerniewski, Burguburu, Séchéyron, Witte, and Steffek.

Krönig (*Deutsch. med. Woch.*, No. 43), concludes, from a series of experiments at the Leipsic clinic, that the streptococcus is killed by the healthy secretion within two or three days at the longest after its introduction. Other organisms introduced from without are soon destroyed. Clinically, the genital canal, he holds, may be considered aseptic in healthy women when from forty-eight to seventy-two hours have elapsed since the last examination. Moreover, he declares that the secretion, whether healthy or not, is always sufficiently acid to prevent the growth of the pus streptococcus. He found no case of alkaline or even neutral secretion in three hundred examinations, and, with the exception of the gonococcus, no pathogenic organisms in women who had not been examined internally. He recognized several forms of vaginal cocci and bacilli, but all of them non-virulent. Antiseptic irrigation was found to hinder rather than help the natural resisting agencies. His observations upon the puerperium bear him out in the conclusion that the vaginal secretion has no important agency in childbed infection. Gönner, Bumm, Thomen, and many others are of like opinion.

Menge (*Deutsch. med. Woch.*, Nos. 45-48), studying the secretions in non-gravid women, reaches similar conclusions.

The authorities thus briefly quoted may serve to present the confused state of the question from the standpoint of the bacteriologists.

Their findings, if any conclusion can be drawn from the conflicting testimony, would go to support the belief that the vaginal secretion is infectious when diseased, and possibly so in health. Does it follow that these genital germs must be counted among the causes of puerperal fever, and as a corollary that vaginal disinfection is a necessary preliminary to the safe conduct of labor?

With a view to the collection of clinical data bearing on the question, I have taken pains to ascertain the prevailing practice among obstetricians in the matter of preliminary disinfection, especially internal disinfection, and, as far as possible, the results obtained under individual methods.

It should be stated that in the matter of external disinfection there is no difference of practice except in minor details.

The hospital patient is given a full bath on admission, with scrupulous cleansing of the external genitals, and she receives an entire change of clothing. Usually the bath is repeated from once

to several times weekly during the waiting period. A general bath is the rule at the beginning of labor. The lower bowel is emptied and washed out with an enema, the entire lower half of the body is rendered as nearly aseptic as possible, and all precautions are taken with reference to the surgical cleanliness of the patient's clothing, the bedding and other surroundings. In some hospitals a compress kept moist with a non-irritant antiseptic is worn over the vulva during the first and second stages of labor.

At the Sloane Maternity in New York, under McLane, the patient receives a bichloride douche (1 to 5000) on admission. A similar douche is given at the beginning of labor, and is repeated on expulsion of the placenta. Dr. Brodhead, the resident physician, reports no mortality in cases conducted wholly in the hospital.

At the New York Maternity hospital (Murray, Coe, Grandin, Jarman, Edgar), a sublimate vaginal injection (1 to 1000) is ordered when the woman falls in labor, and a 1 to 10,000 douche at the close. The post-partum douche is carried into the uterus when intrauterine manipulation or instrumentation has been practised during the labor. In 1321 cases, 1891 to 1895, there were no septic deaths.

In the service of the New York Society Lying-in Hospital no preliminary douching is employed except for cause. A 1 to 10,000 bichloride injection is given on expulsion of the placenta. The uterus is irrigated after intrauterine manipulation. Eight septic deaths occurred in 3737 cases, but much of the work was done under unfavorable conditions in tenement-houses.

At the New York Post-graduate Hospital no internal disinfection is practised in ordinary labors before or after the birth in normal conditions. The vagina is douched before operation and the uterus after intrauterine interference, but not with bichloride. A 3 per cent. carbolic or a 1 per cent. creolin solution is employed. Dr. von Ramdohr, in charge of the service, reports eight hundred and fifty consecutive cases with one death from sepsis. Under a similar plan he has had no septic deaths in private practice in ten years.

Edgar in private cases repeats the external disinfection before each vaginal examination and after each evacuation of the bladder or the rectum. No ante-partum douching is permitted in normal labors. In specific vaginitis the infected tract is prepared as for hysterectomy.

Before a forceps operation, low or medium, the vagina is irrigated with a creolin solution. For version or any operation in which the uterus is invaded the vagina is cleansed with nearly the same thoroughness as in major gynecological work.

Lusk does not employ preliminary douching in normal cases. He thinks they increase the morbidity by disturbing the natural protective agencies against infection. Internal antisepsis is practised when the hand or an instrument is introduced into the uterus.

Ayers, of the New York Polyclinic, practises vaginal irrigation at the beginning and the close of labor. Women having a genital discharge are douched twice daily during the puerperium. In the out-patient department no internal disinfection is used except in the presence of fetid discharges.

In seven hundred and fifty cases in the out-patient clinic, eleven were infected, but none fatally. In the hospital clinic there have been four hundred and fifty confinements since October, 1893, with no deaths. Six had septic fever, all believed to have been infected before admission.

Davis, of Philadelphia, uses prophylactic douching for several days before labor begins when there is much vaginal discharge. If this consists of mucus only, a 1 to 5000 sublimate solution is employed. In all other cases of abnormal secretions a mixture consisting of creolin and green soap, each sixteen ounces, and a solution of potassic hydrate, five ounces, is chosen. Of this a 2 per cent. solution is used. The injections are repeated twice daily till the discharge ceases. Dr. Davis speaks confidently of the value of this practice. At the beginning of labor all patients receive a douche of the bichloride of mercury, 1 to 5000.

In the presence of syphilis or of gonorrhœa the additional precaution is taken to dust the ulcerated surfaces freely with iodoform, and a light iodoform-gauze packing is frequently employed. The iodoform sprinkling is sometimes preceded by applications of carbolic acid and iodine to the local lesions. If the membranes rupture before the patient is in bed, an antiseptic napkin is worn till the child is expelled.

In private practice patients are questioned with reference to the existence of a vaginal discharge during pregnancy, and its character—whether white, yellow, or red, and whether it irritates the external surfaces. If only a hypersecretion of mucus is reported, no douche is prescribed. In the presence of pathological discharges

a solution of creolin and green soap, half a drachm of each to the quart of water, is ordered for injection 'night and morning. In four hundred and seventy-seven cases under his supervision at the Maternity of the Jefferson Medical College, a portion of which number were attended in their own dwellings, there were two septic deaths. One of these women died of acute yellow atrophy of the liver ; the other had gonorrhœa before labor and died of an ascending nephritis. This number included many cases in which major operations were performed. Dr. Davis has had no septic mortality in private work. Hirst, at the University Maternity in Philadelphia, orders, in addition to the usual external disinfection, a single vaginal douche of 1 to 4000 bichloride when labor begins. With private patients the douche is omitted. There has been but one death at the Maternity in six years ; that followed Cæsarean section. He has had no deaths from sepsis in private practice.

At the Preston Retreat, under Norris, a vaginal injection of 1 to 2000 sublimate solution is given at the beginning and close of labor. In simple cases not more than two internal examinations are made. In four hundred and eighty consecutive deliveries under this plan there have been no septic deaths.

Green, of the Boston Lying-in Hospital, in both hospital and private cases, requires during labor one or more vaginal douches of the mercuric chloride (1 to 3000). He reports no deaths from sepsis in family practice, and of 2594 hospital cases he has lost but one from that cause.

In the Maternity Hospital in Baltimore, under Dr. Neale, an internal irrigation is used only after students' examinations or for other special reasons. In one hundred and fifty cases in 1894-95 there was no septicæmia. In sixty-eight the temperature never rose above 99.5° ; in forty-nine others it did not exceed 100.5° during the puerperium.

Kelly practises vaginal disinfection before labor and in the beginning stage only in cases in which there has been much leucorrhœal discharge.

Fry, of Washington, resorts to internal disinfection only for cause. He has one septic death in about six hundred cases and his morbidity is small.

Etheridge, of Chicago, practises preliminary douching with a

saturated boric-acid solution in cases of purulent discharge. In normal conditions he relies on external measures.

Kaltenbach had but three cases of septic fever in fifteen hundred births in which he employed prophylactic irrigation, and these were laid to the under-physicians.

Schauta, of Vienna, writes that after a rigorous external cleansing he gives a single vaginal douche of 1 per cent. lysol solution before the first internal examination.

In 12,052 confinements (January, 1892, to November, 1895), he lost thirty-one women from sepsis—a quarter of one per cent. Of these sixteen were infected on admission, leaving a mortality of an eighth of one per cent. chargeable to the clinic.

Goldberg, of Dresden ("Die Antiseptik in der Geburtshülfe." *Therap. Monatshefte*, Mai, 1894), reports the following experience: During six years, in 3393 normal labors in which vaginal examinations were made, internal disinfection was practised by douching with a 1 to 4000 bichloride solution, aided by gentle friction. Two-tenths of one per cent. died. In 2014 examined cases, in which no internal antisepsis was employed, 88 per cent. were infected and one and one-half tenths of one per cent. died. Douches, he says, are therefore not only unnecessary but actually harmful. The difference in mortality, however, is insignificant.

In abnormal births the vagina, and, if possible, the cervix, are disinfected at the beginning of labor (sublimate 1 to 4000). When many examinations are required, repeated douching is used. After labor the entire birth-canal is washed out with a 3 per cent. carbolic douche, the uterus meantime being well contracted by the aid of a hot abdominal compress.

The large proportion of obstetricians who have adopted the ante-partum douche as a routine measure speaks for the widespread influence of the doctrine of self-infection. Belief in the danger of vaginal germs seems to have found very general acceptance among obstetric specialists. Yet it will be observed that, with few exceptions, they make no attempt at complete surgical cleanliness, trusting for the most part to the douche alone. If, however, the vaginal bacteria are to be counted as factors in puerperal sepsis, even the partial disinfection implied in the preliminary irrigation should yield better puerperiums than are obtained with none at all. This is not sufficiently apparent in the experience cited.

In 23,467 douched cases the septic mortality was one-tenth of one per cent. In the small number of non-douched cases included in the foregoing statistics (2764) the death-rate from sepsis was one and one-half tenths of one per cent. The difference is too small to prove anything for autoinfection, especially if we take into account the varying personal factors which necessarily enter into the statistics of different authorities.

The clinical facts thus far cited, however, would seem to show that the opponents as well as the friends of the douche have been too radical. Those who reject prophylactic douching during labor maintain that it breaks down the natural safeguards against infection; that, moreover, the superficial necrosis produced by concentrated solutions may even add to the risks they are intended to prevent. These views are not substantiated by the foregoing facts. They prove little or nothing more against the douche than that it is unnecessary. In expert hands it would appear to be practically harmless even in normal conditions of the vaginal secretion. One thing is strikingly shown in the experience presented—what has been accomplished in diminishing the septic mortality and morbidity of childbed must be credited almost wholly to measures addressed to the prevention of contact infection.

More conclusive are the results of observations in parallel series of cases made in one and the same clinic, with and without vaginal antiseptics—such we have from several authorities, notably Goldberg, Zweifel, and Leopold.

The comparative study of Goldberg has already been alluded to, and his statistics are presumably included in those of Leopold, presently to be mentioned.

Zweifel found from observations in a large number of births that vaginal douches influenced the course of the puerperium more unfavorably than the omission of the same. He holds that the healthy parturient, in the absence of contact-infection, is safe against septic disease. The natural secretion, he believes, is a better protection than any artificial antiseptic.

At Leopold's clinic during the past few years observations in a very large number of cases have convinced him that irrigation is not only not indispensable, but that in normal births it does positive injury (*Arch. f. Gyn.*, Bd. xlvii. H. 3).

In a series of 427 cases gradually collected of women who were neither examined internally nor irrigated, the result was extraor-

dinarily good, only seven (1.6 per cent.) showing elevation of temperature due to infection. In about the same number of cases in which the vagina was washed out before each examination with a weak disinfectant (1 to 4000 bichloride) the result was not so good.

Of 1136 cases occurring between May 1, 1888, and April 25, 1889, in which after the usual external cleansing the vagina was gently irrigated with 1 to 4000 bichloride, 80 per cent. had no elevation of temperature above 38° C., 20 per cent. had fever, in some cases very high, and there were some deaths. Since, in 1887, the percentage of fever-free patients had been 82.8 per cent. under the opposite plan, it was believed that the douching was injurious.

The query was then suggested, What would be the result if all use of vaginal antiseptics, even in cases which were examined a number of times, were abandoned, and attention confined entirely to subjective disinfection and to cleansing of the external genitalia?

Eleven hundred and twenty-three normal confinements were treated in accordance with this plan. The normal mucous discharge was allowed to remain in the vagina, and the result was much better than in the preceding series; the number of perineal and vaginal tears diminished; there were fewer cases of hemorrhage, less fever during the puerperium, and the general health of the patients was markedly better. Ninety and twenty-nine hundredths per cent. had no rise of temperature above 38° C.

In a series of 1358 births during the year 1890, 1254, or 92.34 per cent., had no fever during the puerperium; 1073 of these were normal labors and were not irrigated, although 804 were examined internally. Of 1487 similar cases in 1891, 91.6 per cent. were wholly free from fever. The conclusion reached was that disinfectant irrigation of the vagina in normal births is oftener harmful than helpful, and should be resorted to only when pre-existing infection is probable. His results were always better in such cases without douching than with it. Prophylactic irrigations of the vagina in normal confinements he regards as not only an unnecessary but in many cases a dangerous procedure.

Leopold's experience is summed up in the following table :

EXPERIENCE AT THE DRESDEN CLINIC (Leopold).

	No. of observations.	Fever-free.
Douched :		
1886	1387	78.23
1887	1388	82.6
1888	1369	79.1
Till April, 1889	440	83.1
Not douched :		
From April, 1889	836	90.8
1890	1358	92.3
1891	1487	91.6
1893	407	94.4
Douched :		
1893	400	87.0
January to June, 1894	800	84.6

This array of clinical facts, coming from so reliable a source and so carefully worked out from a large number of cases, is entitled to great weight. If we accept them, as we must, they dispose of the question of self-infection in healthy women, and they condemn the routine douche as a useless and even injurious practice.

That puerperal fever can sometimes be traced to pathological conditions of the vaginal secretion is a matter of common observation. This is frequently true in the presence of gonorrhœal infection.

My own practice for several years has been to use no ante-partum douching except for cause. Repeated vaginal examinations have been made and instrumental and manual operations performed with no internal disinfection in women apparently in health. Yet I have had no septic death in more than ten years after labors wholly under my personal care. Minor grades of infection have occurred rarely. Some of the latter in my recent experience I could trace to a previously unrecognized chronic gonorrhœa.

In a case of mild phlegmasia alba dolens now recovering I learned that the child in the next preceding birth had ophthalmia.

Mrs. A., recently seen in consultation, was delivered of her second child about four weeks ago. Her obstetrician, a man of exceptional skill, had used every external antiseptic precaution. No douching was employed. Five or six internal examinations were made, the first three hours after rupture of the membranes and while the head was still in the uterus. On the day following

the birth the woman had a chill and the temperature rose to 103.4° F. It was then learned that the mother had suffered from an ichorous vaginal discharge for two weeks before labor. The temperature was of a pyæmic character, and more than once reached 106° F. The child, a girl, developed ophthalmia on the second day and at the same time a gonorrhœal discharge from the vagina. The puerperal disease was doubtless a mixed gonorrhœal infection. This woman died in the fourth week.

In thirty-one consecutive hospital births recently conducted under my supervision, without internal disinfection during labor, there was septic fever in five. In four of the fever cases there was a subacute or chronic gonorrhœa. The puerperal temperature ranged from 100° to 103° F. All the women recovered. Looking over a large number of hospital histories, sixteen cases having gonorrhœal secretions were collected. The diagnosis was substantiated by the occurrence of ophthalmia in the child in twelve, the Credé solution having been imperfectly applied. In the remaining four, the history, together with the character of the vaginal discharge, left no room for doubt. Eight had feverless childbeds, in eight the temperature exceeded 100° F., in five the maximum was over 100.5°, and in three it reached 103° F. There were no deaths.

Krönig (*Centralbl. f. Gyn.*, 1893, No. 8) publishes a series of observations in nine cases of gonorrhœa in childbed. In four the temperature rose to 104° F. Seven had marked fever for two weeks after confinement; in two there was septicæmia. He believes the infection tends to invade the uterus after labor.

With reference to the value of the litmus reaction for distinguishing pathological from normal secretions, I have not been able to fully confirm the findings of Döderlein. Of fifty-three examinations, the reaction was strongly acid in thirty-six, feebly acid in sixteen, and alkaline in one. A marked acid reaction was noted in three instances in which the secretions were yellowish or greenish in color and evidently diseased. Of the feebly acid secretions the gross appearance was normal in one. Additional observations were made at my request by Dr. H. F. Jewett on nine patients in the gonorrhœal ward at the Kings County Hospital. The vaginal mucus showed a strong acid reaction in two, a feebly acid reaction in four, and was alkaline in three. All these patients had passed the acute stage. In the two yielding a strongly

acid response to the litmus-test the characteristic discharge had ceased for over two weeks.

The existence of a yellowish, greenish, or fetid, and especially of an excoriating discharge, is to be taken as evidence of disease and of the presence of wound-infection germs in virulent condition. In such cases prophylactic disinfection is indicated.

When hand or instrument is to be carried into the uterus, long experience leads me to believe that vaginal disinfection is unnecessary, provided the secretion is healthy, the woman in good condition, that all else is aseptic, and that no special violence is done to the parts.

When disinfection is called for on whatever indication, it should be of the kind usual in surgical work. A green-soap and hot-water cleansing for five minutes, followed by irrigation for the same length of time with a weak mercurial, a carbolic, or a creolin solution, removes the germ-laden secretion.

If a mercuric solution is used, the injection is followed with a quart or two of normal saline or a saturated boric-acid solution, to prevent mercurial poisoning. The cervical canal is included in the process. Gentle friction is essential with both steps in the cleansing. To avoid abrasions, the friction is best applied with the fingers or with a cotton ball or a soft cheese-cloth sponge held in the grasp of a dressing forceps.

When time permits, morbid secretions are best corrected by a mild but prolonged antiseptic douche, repeated once daily, or oftener, for several days before labor. A light packing with iodoform gauze maintains in some degree a continuous disinfection. It is unnecessary to say that these measures are to be conducted under an asepsis, both subjective and objective, no less strict than is practised in major surgical procedures.

In closing I submit the following conclusions :

There is no clinical proof that the puerperal infection can occur from normal vaginal secretions.

All childbed infection in women previously healthy is by contact.

Prophylactic vaginal disinfection as a routine measure is unnecessary, and even in skilled hands is probably injurious.

Its general adoption in private practice could scarcely fail to be mischievous.

In healthy puerperæ, delivered aseptically, post-partum douching is also contraindicated.

These rules must hold good in the simpler cases of manual or instrumental interference in which the uterus is not invaded.

A purulent vaginal secretion exposes the woman to puerperal infection.

In the presence of such discharges at the beginning of labor the vagina should be rendered as nearly sterile as possible.

Concentrated antiseptic solutions should not be used, and the process should be conducted with the least possible mechanical injury to the mucous surfaces.

In the case of highly infectious secretions, the preliminary disinfection should be followed by douching at intervals of two or three hours during the labor.

Sterilized glycerin, or other suitable material, may be used to restore the proper lubrication of the birth-canal.

The safest and most efficient means for correcting vicious secretions is a mild antiseptic douche repeated once or more daily for several days during the last weeks of pregnancy.

It is the duty of the obstetrician to know before labor the amount and character of the vaginal discharge.

Clinically, the amount of the discharge, its gross appearance, and that of the mucous and the adjacent cutaneous surface usually furnish a sufficient guide to the treatment.

Probable unclean contact within twenty-four or forty-eight hours is an indication for prophylactic disinfection.

XIV. HYSTERICAL TETANY OR TETANOID HYSTERIA.

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As no definite anatomical lesion has been found for either tetany or hysteria, one gropes in the dark in regard to these two diseases and can classify and distinguish them only by groups of symptoms. Hysteria is a protean disease and tetany is a manifestation of pro-

tean conditions, so much so that many recent writers, among whom are Gilles de la Tourette,¹ Raymond, and Zaldivar, regard nearly all cases of tetany as manifestations of hysteria, no matter in what manner produced. Others who do not go so far say that it should be considered as a symptom and not as a disease. If such is the case, that tetany is only a symptom of a disease, and, further yet, only a manifestation of hysteria, the title tetanoid hysteria would be a correct one, and yet as far as I can find the condition which I am about to describe has never been called by this name, though Raymond has given it the name of hysterical tetany (*tétanie hysterique*), which has been since used by other observers. The list of names which has been employed for this condition since it was first described by Stanheim and Dance, in 1830, is a commentary upon the confusion which has existed in regard to it.

Dance called it *tétanos intermittente*; Murdoch, *retraction musculaire spasmodique*; Constant, *contracture essentielle*; Trousseau, *contracture intermittente des nourrices*, *rheumatismæ tetanille*; Corvisart, *tétanie*; Delpech, *spasmes musculaires idiopathiques*; Marfan, *pseudo-tétanos*; Eisemann, *brachio-tonus rheumaticus*; Jules Simon, *contracture essentielle des extrémités*; Raymond, *tétanie hysterique*. To such a group of names it would be unwarrantable to add another. The day will doubtless come when the true etiology, that is, the pathological conditions of hysteria and tetany, will be discovered, these enigmas will be solved, and there will be a new and enlightened rechristening, in which possibly none of these names will be used except to illustrate the pagan condition in which they exist at the present time.

The condition to which the numerous names have been given and which they describe presents a group of symptoms which, though differing in degree, remains most constant in the salient features, that is, contraction of the muscles, which are held in tonic spasms for a time varying from a few minutes to hours and even to several days, the contracting group of muscles varying in number, usually beginning with one or more of the flexor muscles of the extremities and extending to those of the trunk.

According to the extent of these contractions, Trousseau divided

¹ Hysteria embraces a great part of the contractures of the extremities, benign or severe, called tetany. In France the affection is rarely anything but hysterical. In the last ten years there has not been in Salpêtrière, in the service of M. Charcot, any attack of tetany that was not hysterical, except possibly one (*"Traité Clinique et Thérapeutique de l'Hystérie."*)

the cases into three classes: benign, medium, and severe. Singularly enough, it has been my fortune to meet three cases illustrating these three conditions and also in the order of their gravity. Before further analyzing the symptoms, the disease will be better understood by illustrating them with these cases.

CASE I. was that of a married woman, about forty years of age, of a very neurotic type and of a neurotic inheritance, constitutionally anæmic. She first came under my care for endometritis following a miscarriage and an antelexion, which were corrected. She had these spasmodic attacks at varying intervals since she was a young lady, but they did not assume a

FIG. 1.



Hysterical contraction of the hand. (GILLES DE LA TOURETTE.)

serious nature until the death of her father, when they became more severe and frequent. They usually occurred after some overexertion or some excitement or mental worry. They were preceded by sickness of the stomach and headache. Some hours before the attacks she would be pale and dis-trait, and there would be twitchings of the flexor muscles of the hand and a feeling of numbness. With these warning symptoms, by rest and by the use of aromatic ammonia and stimulants she was able to ward off the attacks, against which she fought with great determination. When the attack culminated the head was drawn back, the fingers were flexed, the

hands thrown somewhat back upon the wrists, the thumbs folded under the fingers; the feet also would be drawn backward, and the toes flexed. The pulse dropped from normal to between 50 and 60 per minute. Once or twice, when I have seen her in these attacks, there was some suggestion of catalepsy, the hand and fingers retaining the tonic spasm, but the arm taking and retaining for a short time the position in which it might be placed. The tonic contractions lasted from ten minutes to an hour. How long they would continue without remedies I could not say. Inhalations of aromatic ammonia, as well as taking it internally, would shorten the spasms, and sometimes would prevent them altogether.

CASE II. was that of a young girl who was about sixteen years of age at the time of the first attack, which came on after a severe mental shock and an operation on one eye for strabismus. She recovered from this attack, when she had another two years later after a fatiguing and exciting journey abroad. As the attack occurred near her menstrual period, the question of uterine disease arose, but there being no symptoms pointing to that I

FIG. 2.



Hysterical contraction of the hand. (GILLES DE LA TOURETTE.)

did not feel that an examination of the young girl was justified. She was very anæmic and neurotic, and of a neurotic inheritance. Her mind was always clear, she was sensible, and very much mortified and chagrined by these attacks, which she would try to escape by every means in her power. Before they came on her face was pale and wore an anxious, distressed look, her eyes were dull and had a peculiar appearance, and she felt a sense of faintness in the epigastrium. There was a weakness of the lower extremities, so that she was unable to stand, the fingers were flexed and closed

over the flexed thumb, the head was drawn back and the back arched, the toes were flexed and the feet extended on the leg. The contractions were much more rigid than those of Case I. The attacks, which were painful, varied in severity and length from a few minutes to an hour. The first attack, in which I did not see her, lasted twenty-seven hours, and the contractions would recur at intervals if there were any excitement to bring them on. The greatest irritability of the whole nervous system prevailed. If there was a slight sound or a gentle touch, even, on the bed, the patient would start and jump. Two years later, after the funeral of her father, there was a return of the trouble. At this time the attacks were preceded by periods of an hour or more of immobility. She was unable to stir or to

FIG. 3.



Hysterical contraction of the feet. (CHARCOT.)

speaking, but was conscious of what was going on about her. She was relieved in each instance by taking a rest cure and by the use of electricity and sedatives.

CASE III. was the most severe of all. The patient was a woman who is now sixty years old. She was the fourth child of ten, whose mother was very much overworked. The patient was very nervous; as a child she had nocturnal terrors from which she would awake with a shriek. When she began to grow she had pain in her back. She is very tall, and at thirteen had attained her growth. At eighteen she saw the gentleman to whom

she was engaged killed by being thrown from a horse, which was frightened by a flash of lightning. For days after she was unconscious or in a delirium, always saying that there was something the matter with her back. When she first began to go about after that illness she had two or three of these attacks of contraction. Although she had more or less pain in her spine, she had no more of them until the third day after her mother's death, seven years ago. She had the menopause twenty years ago, at which time appeared the most intractable irritation and itching of the vulva, for which

FIG. 4.



Hysterical contraction of the toes. (CHARCOT.)

Dr. Emma Ward Edwards, of Newark, whose patient she had been for years and to whom I am indebted for the case, had tried everything possible. As a last resort the nymphæ were amputated, but without giving relief. All the parts had undergone a very great atrophy, except the clitoris, which was very prominent and enlarged. The mucous membrane was very much altered in character, thickened, and hardened. This was benefited by the operation. I do not think that the pruritus vulvæ has had any connection with the nervous affection, the spasms. When the spasms are coming on, for a variable time before she has a cold, numb feeling with an intense

aching and a stiffness before the drawing begins; sometimes there is a sharp darting pain up and down the spine. The spine is always sensitive to the touch, but just before an attack it is much more sensitive. Those about her can tell when an attack is coming on by the distressed look in

FIG. 5.



Contraction of the hand showing Trousseau's main d'accoucheur. (BUZZARD.)

her eyes and the stiff way in which she holds her head. She says the pain begins at the end of her spine and then the fingers begin to pull, and then the tongue, and then the hair, as if it were standing on end; and so the contractions spread until the fingers are flexed on the hand, the hand on

the wrist, the hand on the forearm, and the arm itself is drawn tightly to the chest by the action of the pectoral muscles. The head is drawn back

FIG. 6.



Schematic representation of tetanoid contractions of the muscles in Case III.

as far as possible. She has always been lying on her side when I have seen her in these attacks. The knees are drawn up on the body, and the

feet extended with the toes flexed tightly (see Fig. 6). She complains of a choking sensation. Her face is purple and the temporal veins are very much swollen; the pulse remains normal and there is no feverish movement. It is impossible to describe the tension and rigidity of the muscular contractions. The case is unusual in the extent of muscles involved. It is seldom that the spasms invade the trunk muscles. In this case not only the laryngeal, facial, and thoracic muscles are involved, but also the muscles of the peritoneum and the sphincter vaginæ.

The patient has had attacks of unconsciousness lasting for some time. I never saw her in one of these, and cannot say what relation they hold to the rest of her trouble. She had also an attack of somnolence which lasted two or three days. It was impossible for her to keep awake for any length of time. If she attempted to dress she would fall asleep. Previous to that, as well as since then, she has had insomnia.

She complains of having most of the time a feeling of confusion and bewilderment if she makes a quick motion or has any excitement.

I have spoken in the other cases of the clonic spasms of the muscles of the hand, more or less rhythmical, which precede the attacks. This patient has almost constantly a rhythmical spasm of the flexors of both hands, as well as the pronators. When talking or excited, these spasms, which average about sixty or seventy a minute, are increased in force.

The patient is thin and very anæmic.

She showed the same irritability of the nervous system by her sensitiveness to touch and sound as was shown in a degree in Case I. and to a greater extent in Case II. During the attacks the eyelids were constantly moving with a tremulous motion. In the other two cases they were closed. The pupils presented no unusual appearance.

All writers speak of the prodromata of the attack. There is a feeling of malaise, a general pallor, and headache in a great number of cases. None of my cases had the prickling sensations described by Trousseau and others. Some have a numbness and rigidity. My patient in Case III. had always a feeling of cold and rigidity in the back. In all cases there is a premonition of the attack some time before it occurs. A peculiar leaden look was seen in the eyes of all my patients.

Before the contractions take place there is a sense of weakness which in many cases makes it impossible for the patient to stand. The contractions of the muscle-groups follow in different order in different cases, but generally the flexor muscles of the hands contract first, then those of the feet, and then the large flexor muscles of the upper and lower extremities. In Case III. the spasms generalized so quickly that it was impossible to tell which muscles contracted first, the intensity and rigidity continually deepening until the climax was reached. In studying my own cases as well

as those reported, my opinion is that the contracting spasms run along the lines of least resistance ; for instance, the fingers are flexed first, the flexing of the fingers being the most frequent voluntary act of the whole body. Opisthotonos is more frequent than emprosthotonos.

The contraction of the extremities is well-nigh universal ; therefore it is the name which has been most frequently given to the disease. The extreme rigidity of the muscles should be seen to be realized. Nothing voluntary could approach it in the severe cases. As a writer has described it, the patients were as stiff as if made of iron.

The trembling of the eyelids is frequent. Schultz speaks of fibrillary contraction of the thenar and hypothenar eminence. In all of my cases clonic spasms of the flexor and pronator muscles of the hands and forearms were present before the tonic contractions of the muscles took place. Some cases are recorded where clonic spasms have followed the attacks, but none that I know of where the clonic spasms preceded the attack. The clonic spasms were frequently present in Case III. when the patient was talking and excited. When no attack was pending there was a regular rhythmical myoclonus of sixty to seventy beats per minute.

Trousseau and others speak of the contraction of the muscles of the hand, drawing the fingers together so as to make a hollow cone of the hand, the hand of the accoucheur (see Fig. 5). In all of my cases the fingers were flexed on the hand. Some writers speak of the contractions of the muscles as always bilateral.

The study of the pulse in these cases is of interest. In Cases I. and II. the pulse was slowed to between 50 and 60. In Case III. the heart did not seem much affected, the pulse being about 80. In many cases reported the heart's beat is greatly accelerated, due, it was said, to the asphyxia caused by contraction of the muscles of respiration. The face is often greatly congested and the veins swollen and tortuous. The slowing of the heart, which has not been noted heretofore, that I am aware of, is due I believe to a spasm of the heart muscle, which, were it to become rigid, as in the case of the voluntary muscles already alluded to, might occasion a fatal termination of the disease. This and asphyxia due to spasmodic contraction of the lungs might occasion a fatal termination, the latter being the only cause of death known to hysteria. A

fatal termination of hysterical tetany has not been recorded. The prognosis as regards recovery is also good.

The temperature is generally normal. If fever is present it is due to some other cause. Jaksch, who has made tests on thirty-five cases, reports that nine out of the thirty-five had subnormal temperature. In the others there was an increase above the normal. No systematic record of the temperature was made in the first two of my cases. In Case III. the temperature was below normal.

The great difference between these cases of tetanoid hysteria and other forms is the fact that the brain is undisturbed. The mind is clear, and the effort to control and throw off the attack is always intelligent and earnest. The pain from the contraction of the muscles is very great. Jaksch says there is great sweating in severe cases while the pain lasts. This was not present in any of my cases.

The electrical and mechanical irritability of the motor nerves in all these cases is greatly increased. Kussmaul, Benedict, Erb, Chvostek, and others have investigated this part of the subject thoroughly. I did not have the opportunity to do so in my cases. One could not expect any other condition to be present. The hearing of all three was greatly exalted; a slight noise would either induce an attack, or, if it were present, would intensify the contractions. The state was exactly similar to that of the frog which has received strychnine, as exhibited in physiological lectures.

Reference should be made to the so-called phenomenon of Trousseau, by which is meant the reproduction of the spasms at will by compressing the affected parts, either in the direction of their principal nerve-trunks or over the bloodvessels, so as to impede the circulation, venous or arterial. I regret not having observed whether this was present or not in my cases. Charcot has said that this symptom was not especially diagnostic, as such compressions would occasion contracture in patients of an hysterical diathesis, and he gave the name of diathesis of contracture to this condition. Weiss and Chvostek found that contractions could likewise be produced by drawing back the corner of the mouth and the angle of the nose and making pressure on the *pes anserinus*. But Hochwart found the same thing, though in a less degree, in patients not suffering from tetany.

In discussing these cases I cannot hope to have escaped from

the confusion in which the whole subject is involved, for the reason that it has been for the most part approached from the side of tetany, which, as has been already said, is more of a symptom than a disease, since it occurs in a variety of morbid conditions. There is the tetany of infants and children; there is the tetany of epidemics, which Simon calls a "neurosis and an imitation;"¹ there is the tetany which occurs from poisons ingested, as ergot, mercury, and lead, and arsenic; the tetany which occurs from the poisons generated within the body, the ptomaines and the poisons of disease, rheumatism, diarrhoea, constipation, typhoid fever, meningitis, and traumatism.

Notwithstanding all these different kinds of tetany, spontaneous or symptomatic, cases are very rare, and even those engaged in the study of nervous diseases alone may fail to meet a case in the course of years of practice. Dr. Crozer Griffith collected the cases of tetany of every variety that had occurred in America, and these numbered but seventy-two.

Because of the lack of positive knowledge of the pathological anatomy of the condition, the theories of the causation of the trouble are endless. The seat of the trouble has been located in the muscles themselves, in the nerve-endings and in the nerve-trunks, in various conditions of the spinal cord—softening, inflammation, or sclerosis, inflammation of the anterior horns, of the membranes—trouble in the medulla, in the cerebellum, and in the different portions of the brain. Whatever may be the cause, there seems to be a loss of the governing and adjusting power. Dr. Hughlings Jackson thought that it was due to the defective antagonism of the cerebellar influence. In health all muscles are doubly innervated by both the cerebellum and the cerebrum, there being a co-operation of antagonism between the two great centres. While the cerebrum innervates the muscles in the order of their action from the most voluntary movements (the limbs), to the most automatic (the trunk), the cerebellum innervates them in the opposite order. The cerebrum is the centre for changing movements and the cerebellum for constant movements. The theory is ingenious and plausible.

¹ The history of the epidemics of tetany is illustrative of the hysterical aspect of the disease, and forms a most interesting chapter, to which the limits of this paper forbid more than a passing allusion. There were epidemics in Germany in 1691 and 1717 affecting adults exclusively. Armstrong reports one in Hempstead in 1776. Rabaud reports an epidemic among children in 1856, and Mitrailis, Regnaud, and Simon the epidemic among the school children of Chantilly.

I cannot help believing that the trouble is due to some generalized centric condition too delicate and subtle for us as yet to determine and not to any localized focal lesion.

In regard to the treatment, it may be said that the spasms have been relaxed by chloroform, ether, aromatic ammonia, stimulants, applications of heat and cold in the form of baths and bandages, applications to the spine. Pressure along the great vessels and nerve-trunks supplying the parts is said to relieve the spasms of the muscles when present as well as to produce them. The recurrence of the trouble is prevented by all the means employed in hysteria and neurasthenia, such as rest-cure, tonics, and galvanism.

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XV. THE SURGICAL TREATMENT OF RETRO-DEVIATIONS OF THE UTERUS.

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It will be admitted that cure of retro-deviations of the uterus is seldom if ever accomplished by the ordinary methods of treatment, and that they demand more careful consideration than is usually accorded them. The routine plan of inserting a pessary and dismissing the case from further attention is an error, unfortunately, too often committed. The pessary can only be regarded as a splint which is serviceable as an aid to other measures in bringing about the desired result, but nothing more, and will accomplish very little unaided. It may be true that all such displacements of the uterus do not require surgical intervention for their cure, but when structural changes have taken place in the walls of the organ nothing else will yield a prompt and satisfactory result. A pessary might be worn throughout the lifetime of these patients, and, even if it maintained the uterus in a correct position, a cure would never result and she would never be able to go without it, unless something else is done to overcome the conditions which produce the displacement or are consequent upon it.

These displacements do not necessarily require always a grave surgical operation for their rectification, since frequently a trachelorrhaphy, or curettage, or both combined in conjunction with appropriate after-treatment, will be sufficient in many cases. It is only where there is fixation from adhesions that it may become

necessary to open the abdomen, break them up, bring the uterus forward, and suspend it from the anterior abdominal wall.

On account of the difference in the pathological condition in the uterine wall, retroversion and retroflexion should be dealt with differently. In retroversion one of two conditions may prevail. The uterus is either soft, being in a state of subinvolution, or it is hard, the condition being one of sclerosis. The latter is believed to be an advanced stage of the former, both being regarded as different stages of metritis. In retroflexion, if it has existed for any length of time, the condition of the anterior and posterior walls is quite different. The anterior wall is put upon the stretch and the posterior wall is contracted and shrunken, its structure being dense and hard because of interference with the circulation and nutrition, making the displacement permanent.

Associated with this condition of metritis there is always an endometritis, in both retroversion and retroflexion. Therefore in both forms of displacements dilatation with careful curettage is demanded as a preliminary step in their treatment; but in retroversion the uterus should subsequently be carefully packed with gauze to secure depletion and drainage, and to stimulate contraction; and in retroflexions, instead, a glass drainage-stem should be employed because it will act as a splint and maintain the uterus in a straightened position. With the aid of absorbent iodoform-gauze packed in the vagina this is readily accomplished.

FIG. 1.¹

Speculum.

TECHNIQUE OF CURETTAGE AND TREATMENT OF RETROVERSION. The patient is anesthetized after previous preparation,

¹ The author's speculum possesses many advantages over the Sims speculum or the bivalve or trivalve instruments, on account of the convenience of manipulations afforded and because it is self-retaining in both positions.

which should include shaving of the vulva and irrigation of the vagina with a hot solution of bichloride 1 to 4000, or a 1 per cent. solution of lysol, hot. She is then placed in either the dorsal or lateral (Sims's) posture, as is most convenient for the operator. The speculum represented by the accompanying cut (Fig. 1) will answer equally well for either position. The cervix is seized on the right side with the angular tenaculum forceps (Fig. 2), which

FIG. 2.¹

Angular tenaculum forceps.

is held in the left hand, and the dilator (Fig. 3) is introduced up to the shoulder. The necessary degree of dilatation should be done slowly and gradually, so as to prevent injury to the parts, especial care being taken to prevent the instrument slipping out and producing laceration.

FIG. 3.²

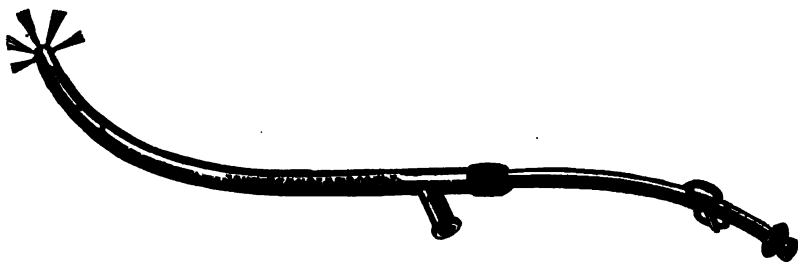
Dilator.

The dilatation accomplished, the double-current irrigator (Fig. 4) is inserted to the fundus and the cavity is washed out with a hot 1 per cent. solution of lysol. The next step is the curettage, and it must be done with special care. Every part of the cavity is gone over and all diseased membrane is thoroughly removed. Selecting a medium-sized, rigid, dull curette, the posterior surface

¹ The special advantage of the author's angular tenaculum forceps is that the strain is against the curved sides of the points and not directly against the points, as is the case with the straight instrument, hence it does not cut out or slip and produce laceration of the tissues seized by it.

² The author's dilator is designed to effect slow, gradual dilatation without injury. The curve is less acute than that of dilators in general use, and the ratchet catch attached to the handle holds the dilatation as it is accomplished, but at the same time it can be quickly relaxed at any time by pressure of the little finger upon the spring when the instrument seems to be slipping.

is first curetted, commencing at the left (patient's right); then the anterior and lateral surfaces are treated in like manner. Substituting a smaller curette, the membrane is removed from each cornu and the fundus. Then with a sharp curette the hypertrophied tissue about the internal os is removed. This being accomplished,

FIG. 4.¹

Uterine irrigator.

the cavity is again thoroughly irrigated with a hot solution of lysol and it is then ready for the insertion of the gauze. This is best accomplished by means of the applicator forceps (Fig. 5). Iodoform-gauze (20 per cent.), which has been rendered absolutely sterile, is used. A strip an inch wide and a yard long is carefully introduced into the uterus, leaving an inch or two of the end

FIG. 5.



Uterine applicator forceps.

protruding into the vagina. The vagina is then tamponed with the same gauze (cut into strips two inches wide) in such manner as to maintain the uterus in a correct position. Since the gauze will cease to act as a drain when it becomes saturated, it should be removed and renewed every twenty-four hours. At the same time the uterine cavity should always be thoroughly irrigated with the hot solution to remove all débris and secretions.

¹ The author's irrigator is longer than those in general use, hence the outflow is outside the vulva. The outer tube is conical, the diameter increasing at outer end, which avoids stoppage with clots or other débris.

The after-treatment should be continued for a week, during which time the patient is confined to bed. At the end of this time a vaginal pessary is adjusted so as to maintain the uterus in a correct position, and the case is kept under observation for several weeks, the uterine cavity being washed out once or twice every week as necessity demands. This is to be continued until a healthy condition of the endometrium has been restored, as will be evidenced by the absence of débris or mucus in the washings.

If these details are observed carefully there will be no rise of temperature in these cases, and the result of the curettage will be permanent. There is no necessity for the complicated process of preparing the gauze which has been advocated by some writers. It is only necessary to insure its absolute sterility by submitting it to the necessary degree of heat for a sufficient length of time.

After this operation and the subsequent after-treatment the uterus will quite rapidly resume its normal size and condition if it has been maintained in a correct position by the pessary, which should be worn for several months.

TECHNIQUE OF THE TREATMENT OF RETROFLEXION. The dilatation and curettage is done in these cases in the same manner as described for retroversion, but instead of inserting gauze into the uterus a glass drainage-stem (Fig. 6) is inserted to serve as a

FIG. 6.



Glass drainage-stem.

splint and maintain the organ in a straight position until a normal condition of its walls can be restored.

This stem is two inches long, is perforated through the centre for drainage, and its size is No. 12, English scale.

After curetting the cavity and irrigating with hot lysol solution, the stem, which has previously been rendered sterile, is introduced and held in position by a tampon of iodoform-gauze packed carefully around the cervix. Additional tampons of the same gauze are inserted in the front of the cervix, forcing it backward into the posterior *cul-de-sac* of the vagina, thus throwing the uterus forward into a position of anteversion.

The stem should be removed every day, the cavity of the uterus

washed out with lysol solution, and, after cleansing it, the stem is reinserted. At the end of a week, during which time the patient is confined to bed, a pessary is carefully adjusted to take the place of the vaginal tampon and maintain the uterus in a correct position. The stem is retained for a day or two longer with only a loose wad of gauze against it to prevent it slipping out. If it is found that the pessary will sustain the organ in a proper position the stem may be removed and the patient is permitted to get up. The pessary must be worn for several months until it is found that the uterus will retain a normal position without its support.

Almost every case of retro-displacement of the uterus not fixed by adhesion or exudation is satisfactorily amenable to this method of treatment. When slight or very recent adhesions complicate the case they may sometimes be broken up by careful manipulations through the vagina under anæsthesia without opening the abdomen. Then the above-outlined operative procedure is to be adopted as in those cases when adhesions have not existed. When the organ is bound down by exudation, this should, when possible, be removed first. When a lacerated cervix complicates the displacement, it should be repaired at the same time, but in these cases the gauze packing will have to be dispensed with, because it might interfere with proper union.

In dealing with retroflexion, if it is necessary at the same time to do a trachelorrhaphy, the drainage-stem can be used without danger of interfering with union of the freshly united surfaces if the operator is careful, in making the denudation, to leave ample room for the new cervical canal, and not draw the sutures too tightly. When the adhesions are firm and numerous they should be broken up by the finger inserted into the abdominal cavity through a small incision, and the uterus should be brought forward and suspended from the anterior abdominal wall after the manner described by Howard Kelly.

TECHNIQUE OF SUSPENSIO-UTERI. After proper preparation of the patient she is anæsthetized, the bladder is emptied, and an incision about two and one-half to three and one-half inches long is made through the abdominal wall just above the opening into the peritoneal cavity. Two fingers of the left hand are inserted and the uterus is loosened from its attachments and the fundus is brought forward and up into view. The edge of the peritoneum on each flap of the abdominal wound is next seized with pressure

forceps and drawn out. A curved needle carrying a medium-sized silk ligature is inserted through the peritoneum and subperitoneal fascia on the left, near the lower angle of the wound, and is next inserted upon the posterior face of the fundus, and then through the peritoneum and subperitoneal fascia on the right flap of the abdominal wall, at a point opposite its insertion on the left.

When this ligature is tightened it brings the posterior face of the fundus snugly up against the anterior abdominal wall. A second suture is inserted near the other on the abdominal wall and just below the other on the posterior face of the uterus. When this suture is tightened it throws the uterus forward still more into a position of ante flexion. These sutures are tied carefully, so as to maintain an equal strain on each, bringing the uterus up snugly against the abdominal wall, and the abdominal wound is closed in the usual manner.

One advantage claimed for this operation over that of ventro-fixation is that the uterus is not permanently fixed in an abnormal position, but it eventually recedes somewhat and remains suspended by two firm fibrous cords in an easy position of moderate ante flexion, and is fairly movable.

The patient is confined to bed for two or three weeks and is directed to wear an abdominal support at first upon rising. No pessary or additional support will be needed after this operation, but injuries to the pelvic floor should be repaired at the same time in all cases.

When done in properly selected cases this operation should be uniformly successful, and the mortality is *nil*.

Alexander's operation, which is only applicable when the uterus is movable, is unnecessary, its chief disadvantage being the prolonged convalescence it entails. The operation described above for movable displacements is preferable because it can be done quickly and necessitates only a week's confinement in bed. It is a rational procedure because it aims at a cure of the coexisting metritis and endometritis, which is the maintaining cause of the displacement.

It has been suggested to apply Alexander's operation to fixed retro-displacements after first incising the posterior *cul-de-sac* and breaking up the adhesions. This may be easy when the adhesions are not very extensive, but the difficulty of securing thorough asepsis by this route is certainly an objection as well as the time which this and the added Alexander's operation involves. All

things considered, suspensio-uteri is to be preferred when the organ is firmly adherent.

Of the other operations recently suggested for overcoming these displacements, that of incising the posterior *cul-de-sac* of the vagina and bracing the uterus up by means of gauze crowded into the peritoneal cavity behind it does not appear to be either wise or justifiable. A retroversion may be thus overcome, but I fail to see how it can maintain a retroflexion even temporarily in a correct position. The chief objection to this procedure, apart from its faulty principle, is that it substitutes an exudation for the uterosacral ligaments which are destroyed, and the cervix remains fixed to the rectum—an abnormal condition for many reasons objectionable.

Vaginal fixation does not appeal to me as either rational or justifiable, since it substitutes a fixed antelexion for a movable displacement. The recent reports of protracted and complicated labor, when it follows, certainly constitutes a very serious objection to this operation. Its originator, Mackenrodt, has abandoned it.

Upon the whole, the operations described above for movable displacements and suspensio-uteri when the uterus is adherent or when disease of the adnexæ complicate, are, I believe, the most satisfactory, and the results, so far as my observation goes, bear me out in this conclusion.

XVI. THE SURGICAL TREATMENT OF BACKWARD DISPLACEMENTS OF THE UTERUS.

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THE treatment of backward displacements of the uterus forms an important feature of the gynecologist's work. Despite the assertions one occasionally hears, and notwithstanding the statements one now and then finds in literature, that uterine displacements frequently give rise to no trouble, I think most observers will agree with the writer that, as a rule, such conditions sooner or later produce symptoms of greater or less severity. Excluding the cases of congenital retroversions, and the cases of retroversion sometimes accompanying lactation and senile atrophy, I have during an extensive dispensary and a moderate private practice of

over ten years seen but few cases that did not cause considerable trouble at some time or other. It may be that freedom of symptoms obtained for years until conception took place, resulting in an abortion with all its consequences,¹ or that the woman may have gone on for years ignorant of the fact that she had any pelvic lesion until the malposition brought about chronic metritis, or involvement of the tubes and ovaries, or until adhesions had formed. When a woman comes to us and says her backache, bearing-down pains, etc., date back for only a few months, and we find a hard, enlarged, and retroflected uterus, we know that the displacement must have existed for a long time ere it could have produced pathological changes of such an advanced type. I quite agree with Schultze that abnormal mobility must be looked upon as one of the earliest stages of retroversion, and when left to itself will usually result in the most severe degree of that condition. It behooves us, then, to attempt to remedy every case of backward displacement, even if it produces no symptom at the time of its discovery. This, to my mind, constitutes true prophylaxis as well as real conservatism, having for its aim the prevention of serious tissue-changes which, when once established, offer but indifferant results to any form of treatment.

As my paper deals only with the surgical treatment of the condition in question, I will merely state incidentally that most of us agree upon the advisability of making a faithful attempt to cure the malposition by mechanical means; *i. e.*, by either tampons, pessaries, or, I may add, pelvic massage. The more recent the trouble the more likely will it be that these means will succeed. Unfortunately, we do not see the cases in the early stages, and this circumstance in part accounts for the discouraging results usually attending non-surgical treatment.²

Although the number of operative procedures is legion that have been devised for the cure of retroversions and retroflexions, the following alone have stood the test of time and merit our consideration:

¹ Romheld, on analyzing 232 cases of abortion in Kehr's clinic in Heidelberg, found 58 per cent. to have been due to retrodeviations of the uterus. (Inaug. Dissert., Heidelberg, Centib. für Gyn., 1895, No. 39.)

² Statistics covering a large number of cases give from 7 to 10 per cent. of cures. This percentage is considered very high by most gynecologists. Some give it as their experience that not more than from 3 to 4 per cent. are permanently cured. By a permanent cure is meant that the uterus will remain in normal position after the removal of the pessary.

1. Shortening of the round ligaments within or without the abdomen.

2. Ventral fixation.

3. Vaginal fixation.

1. Shortening of the round ligaments. Alexander's operation.

This operation has several warm advocates in this country. There are, however, some serious objections to it that cannot be counterbalanced by the problematical advantage claimed by its advocates that the uterus is held in position by its natural supports. It certainly has not been proven that the round ligaments are the structures that hold the uterus in the normal position. Another claim for the operation is that it fixes the uterus in an ideal position. I have examined a great number of cases in which the operation had been done. In some I found the fundus drawn over to one side or the other; in others, again, the whole uterus lay immediately behind the symphysis, with the axis of the vaginal portion parallel to that of the outlet of the vagina. But I am not going to split hairs on this point. In a fair proportion of cases the uterus lay in a satisfactory position.

The insurmountable objection to Alexander's operation has been that it afforded no opportunity of ocular inspection and suitable surgical treatment of the adnexa, which are so frequently involved in backward displacements, and of the breaking up of adhesions that exist to a greater or less degree in at least 95 per cent. of these cases. These contingencies narrowed down the indications of the operation to mobile retrodisplacements uncomplicated by diseased adnexa. And just here came the difficulty; the mobility of the uterus could readily be determined, but the exact condition of the adnexa could not be ascertained without direct ocular inspection and direct palpation. To meet this objection it has recently been proposed to first make a vaginal incision in the posterior fornix, through which the adnexa could be directly palpated and the adhesions broken up. Singularly enough, this proposition came from one of the foremost leaders in the battle that is being waged in favor of the vaginal over the abdominal route for pelvic surgery. One of the strong arguments in favor of the former justly used by him and others is that it avoids a weak point in the abdominal wall with the consequent risks of the development of hernia. The operation of shortening the round ligaments (Alexander's) necessarily produces two such weak points

in the abdominal wall. A few years ago, while studying up this point, the writer wrote to a couple of gentlemen with large opportunities of seeing hernias of all descriptions to kindly furnish him with a statement of their experiences in the occurrence of hernia following Alexander's operation. One gentleman replied that in the last two years he had seen twelve cases of hernia directly traceable to this operation. Nine of these women had hernia on one side only, and three on both sides. The other gentleman had seen nine cases of hernia during the same period. The operations had been done by five of the best operators in the city. These facts alone prove that the occurrence of hernia after the operation is not uncommon.

That it should frequently follow the operation is no more than could be expected; first, because the tissues have often to be mutilated a great deal before the ligaments can be found; and, second, that there are but few operators who have such control of all the conditions that they can invariably secure primary union. Everyone agrees that it not infrequently happens that the ligaments are difficult to find, and that the tissues, when found, are so brittle as to break readily, or so changed by fatty degeneration as to be unfit for the purpose of mooring the uterus.

To first make an incision into the peritoneum (for the peritoneal cavity must be entered) through the vagina and deliver the tubes and ovaries through this incision, for the purpose of exploration and treatment, if this be necessary, a procedure often beset with no small degree of difficulty—then to do an Alexander, which generally is attended with more or less difficulty and consumes considerable time, seems to the writer, though he has the highest regard for the gentlemen making this proposition, rather extensive and severe surgery for the condition under discussion. The one great advantage that Alexander's operation had over ventrofixation was that it did not subject the woman to the risks inherent to opening the peritoneum. The operation done in accordance with the proposed modification effaces totally that advantage and substitutes two weak spots in the abdominal parietes for one. Furthermore, the existence of two cicatrices in the abdomen of a woman is not particularly a desirable desideratum. Apart from an æsthetic consideration, a skin cicatrix is not a pleasant possession, and frequently gives rise to more or less discomfort to its owner. These, perhaps, are minor matters, but they rise in importance if

the same end, *i. e.*, a cure of the patient, can be achieved by other methods to which they do not appertain.

2. Shortening of the round ligaments within the abdomen.

I have had no experience with cases operated on in this manner. The nicety of adjustment necessary to draw the ligatures applied to the loops of the cord just tight enough to hold, but not so tight as to produce constriction, is so great that the method has never become popular.¹

A further objection that will occur to many is the necessity of leaving four non-absorbable sutures within the abdomen. The pranks which sutures of non-absorbable material are prone to play within the abdomen are peculiar and uncertain. With the abdomen opened most operators would, I think, prefer to do a ventral fixation, which has generally given pretty good satisfaction and which has stood the test of time fairly well.

3. Ventrofixation. This operation has been modified in various ways. That so many modifications have been attempted probably furnishes strong evidence that the method is not without its drawbacks. For the past three years I have resorted to ventrofixation several times. I have, with but few exceptions, followed the method known as Leopold's, *i. e.*, of stitching the anterior aspect of the body and fundus to the abdominal wall. In one case known to me pregnancy occurred. The woman went to full term, though she was threatened with a miscarriage at the fourth month. I found the uterus in a forward position when I examined the woman three weeks after labor. The objections inherent to the operation are those attending the opening of the peritoneal cavity through the abdominal wall. As the *pros* and *cons* of the abdominal route have recently been fully discussed, it will not be the purpose of the writer to enter into them, save as he may find it necessary in the consideration of the next method, which he has had the honor of introducing into this country.

4. Vaginofixation. It was in the autumn of 1893 that I performed the first operation, following pretty closely the description of Mackenrodt and Winter. I presented a short paper on the operation to the New York Obstetrical Society on November 21, 1893, and reported four cases.²

¹ P. Mundé has reported a case in which the sutures were drawn too taut, and as a consequence an abscess resulted, which fortunately discharged through the abdomen. (*The Amer. Journ. of Obstet.*, May, 1895, p. 73-77.)

² *N. Y. Journ. of Gynec. and Obstet.*, January, 1894.

At a very early stage of my work I modified the steps of the operation so that the body and fundus were brought well into the incision and the fixation-sutures passed with the aid of sight. It is interesting to note that the operation has undergone several similar modifications in the hands of different operators, all independent of one another. As the writer has given a full description of the technique in his article published in the *New York Medical Journal* of October 27, 1894, it will be unnecessary for him to describe it here. Since then, however, he has made some very important modifications. In the first place, he has entirely discarded the use of the sound to antevert the uterus. This he now accomplishes in the following manner: After the peritoneal fold has either been torn through with the finger or cut with the scissors, the volsellæ applied to the cervix to draw it to the vulva are now made to push it backward into the posterior fornix of the vagina. This step already throws the body somewhat forward. Then, either with successive volsellæ or traction sutures (preferably the latter, as they are not so likely to tear out), he climbs up the anterior surface of the uterus until the fundus is reached and delivered entirely through the vaginal incision. The whole uterus now presents at the vulval opening. Its anterior and posterior surface are rapidly scanned for any pathological growths. Then with two fingers the adnexa of one side are delivered through the incision. The ease or difficulty attending this procedure depend upon the extent and firmness of the adhesions existing between the adnexa and pelvic wall and floor. After they are delivered they can be treated on conservative surgical principles with the same facility accompanying the abdominal route. To anyone who has not seen or done the operation, this statement may seem incredible. But it is a fact, nevertheless, that I have often resected a diseased portion of an ovary, whipping over the healthy portion with a continuous catgut suture, and have removed a portion of a diseased tube with the same ease that I have performed similar things through an abdominal incision. When the tube and ovary are hopelessly diseased they are tied off, as in the abdominal method, and ablated.

The tube and ovary of the other side are then delivered and treated in the same manner. Two or three silk sutures are now carried across the anterior surface of the uterus about 1 cm. apart, the superior one being passed about a centimetre below the level

of the insertion of the tubes. The next step consists in returning the uterus (the adnexa having been returned before) into the peritoneal cavity. This may sometimes be accomplished by considerable difficulty, but I have always been able to surmount it by catching the cervix with a volsellum and drawing it forcibly into the position in which it was held at the commencement of the operation and by pressing the fundus with the fingers backward and downward. The fixation-sutures are next carried through the vaginal flaps by means of a carrying suture. Before this, however, the anterior surface of the uterus between the sutures has been scarified¹ as in ventrofixation.

It goes without saying that in the event of a laceration of the cervix or perineum, or of both, it is attended to at the same sitting. I have had occasion several times to perform the following series of operations at one sitting: 1. Curettage; 2. Exploration and surgical treatment of the adnexa; 3. Vaginal fixation; 4. Amputation of the cervix; 5. Perineorrhaphy; 6. Ablation of hemorrhoids, either by clamp and cautery or by ligature. It has not been my experience thus far to witness any shock or any other ill effects from following this course. The ability to do this expeditiously and with immunity forms, to my mind, an important advantage of this method. Of course, I am aware that the same thing may and has been done with Alexander's operation and with ventrofixation. But if it should take an hour or longer to find the round ligaments, as it often does, the patient would need to be kept under the anæsthetic for an exceedingly long time.

I have performed the operation of vaginal fixation forty-eight times. The cases require to be divided into the following series:

First series. Simple vaginal fixation without intentionally opening the peritoneum.

Group A. Mobile retroflexions and versions without recognizable disease of the adnexa—five cases. Results, four cures and one relapse after four months following an induced abortion. Duration of observation from seven to thirty months.

Group B. Retroflexio-versions with adhesions and moderate disease of the adnexa. Fifteen cases. Results, eight cures, seven relapses occurring from four weeks to four months. Of the seven failures four were cases of congenital retroversion. Duration of observation from fifteen to thirty months.

¹ In order not to obtain too firm union of the uterus to the vaginal wall, the scarification had better be avoided.

Second series. Vaginal fixation combined with vaginal coeliotomy.

Group A. Mobile retroflexio-versions with slight disease of the adnexa. Nine cases. Results, nine cures. Duration of observation from three to fourteen months.

Group B. Retroflexio-versions with firm adhesions and with more or less disease of one or the other adnexa, requiring ablation or plastic surgery. Twenty cases. Results, nineteen cures. One partial relapse. Duration of observation from one to fourteen months.

The case of partial relapse in Group B of the second series occurred in a very delicate elderly spinster, who, for over six years, had been treated off and on with pessaries and tampons without any success. The uterus was in complete retroflexion, with the flexion very rigid, and the fundus moderately adherent posteriorly. There was a small subserous fibroid attached to the anterior aspect of the fundus, which was removed at the time of operation. Owing to extensive adhesions and the poor general condition of the patient I did not, as in the other cases of this series, deliver the uterus entire. Nor were the adnexa brought out for inspection through the incision. The case, therefore, does not truly belong to this series. Of course, some of the cases have not as yet been under observation for a sufficient length of time to justify a positive opinion as to permanent results. With the exception of two or three cases, however, more than four months have elapsed since the operation, and it has been my experience that when a relapse does occur it takes place within the first four months. The cases included in the first series go to show that in mobile retroflexions, uncomplicated by appreciable disease of the adnexa, the results are good even without entering the peritoneal cavity. When adhesions exist the results are uncertain, as one might expect. In Group B of this series there were four cases of congenital retroversions. In one of them I did subsequently a ventrofixation, and removed a diseased tube and ovary. Six months later the uterus had again fallen into retroflexion. This case, as well as others of the same nature, emphasizes the inutility of attempting to remedy bad cases of congenital retroversion, attended with symptoms, by any of the operative procedures in vogue. The failures are due to the anatomical condition that obtains, which consists in a shortening of all the uterine ligaments

and pelvic supports. It was with the greatest difficulty in the foregoing case that I could bring the fundus up to the abdominal parietes. Dr. Edebohls has reported a similar case in which he could not bring the fundus any further up than within two inches of the walls of the abdomen. He then did an Alexander, but the displacement quickly returned. Finally, he performed a vaginal fixation, and again after a few months the uterus was found in retroversion.

Four of my cases, to my knowledge, subsequently became pregnant. One brought on an abortion, as already stated. Two others went to full term. The gestation in these two cases was remarkably free from any disturbances; there were no bladder symptoms, nor at any time did symptoms threatening a miscarriage become manifest. During the same period I had under observation a case of pregnancy in a woman on whom I had done a ventrofixation. The patient was threatened with a miscarriage at the fourth month and had considerable pain and bladder disturbances during the greater period of her gestation. I delivered one of the cases with vaginal fixation myself. The labor was easy and normal in every respect. The woman was exceedingly anæmic, though she lost but a small quantity of blood at the termination of the labor. As a consequence of the anæmia and inability to perform satisfactorily the function of lactation, there was tardy involution and a tendency for the heavy uterus to fall into retroversion. The wearing of a pessary for a few weeks overcame this tendency. This was one of my early cases.

The other pregnant woman I had under observation until her eighth month, when I lost sight of her owing to her removal. Up to this time she had been remarkably free from any disturbances. After a persevering search I succeeded in finding her whereabouts on January 19th of this year. I called at the house and learned the following: She had been very well until the day of her labor, June 24, 1895. While on the street the day before the waters broke without any pain. On the above-stated day, at 2.30 P.M., slight labor pains set in, and ninety minutes later the child, a male, was born. The doctor (Dr. M. Block) just reached the house in time for the delivery. She had a good puerperium, getting up on the tenth day. She has been very well since, and nurses her baby. She has never felt better in her life, and is doing all her household work alone. Menstruation has not reap-

peared. On examination I found a small, perfectly involuted uterus lying in an ideal forward position. It may be interesting to give the following abstract of her history prior to the operation :

Patient, aged thirty years ; married seven years. Last child three years ago. One miscarriage at two months—eighteen months ago. Second labor was instrumental, and was followed by some fever for a few days. Never quite well since. Following the miscarriage she had chills and fever for forty-eight hours. Ever since then has been ailing all the time with severe backache, pain across the lower part of the abdomen, profuse leucorrhœa, and frequent micturition, having to get up several times during the night to void urine. On examination the uterus was found retroverted to the third degree and moderately adherent posteriorly. The posterior lip of the cervix was torn in the median line to the vaginal attachment, and was eroded. There was considerable thick tenacious discharge hanging from the os. She had been treated for several months with tampons and with pessary without any benefit.

On November 6, 1893, at the St. Elizabeth Hospital, curettage, trachelorrhaphy, and vaginal fixation were done. The patient left the hospital November 27th. She was presented at the New York Obstetrical Society on April 17, 1894. Dr. E. H. Grandin (appointed by the chair to examine the patient) reported that he " found her uterus in a good position in the pelvis, fixed anteriorly to the cicatrix in the anterior fornix. The woman had told him that she had had no pain, although previously she had some symptoms referable to the uterus, such as backache and dragging pain ; in other words, the operation seemed to have a field of utility contrary to his previously formed opinion. He would like to see the case after a long period had elapsed, because he thought it very problematical that the operation would give permanent results." (*Transactions of the New York Obstetrical Society ; New York Journal of Gynecology and Obstetrics*, June, 1894).

The third case of pregnancy I saw on January 22d of this year. The woman had been operated on in a tenement-house on June 30, 1895, in the presence of Dr. S. Rapp and Dr. A. F. Brugman, in addition to my usual assistants. There had been retroflexion of the third degree and prolapsus of the first degree. There was some thickening and sensitiveness on pressure of the right tube. I curetted the uterus, then performed a vaginal celiotomy, delivering the uterus and adnexa through the incision. A couple of cysts in the right ovary were punctured. Two cysts, each the size of a cherry, were attached to the distal end of the right tube. These were ligated and cut away. A narrow slip was excised from each vaginal flap. The uterus was fixed by three silk sutures and the vaginal flaps brought together by continuous catgut sutures. The uterus was in a good forward position and well up in the pelvis after operation. The patient made an uneventful recovery.

This case, six weeks after operation, was also lost sight of, owing to removal, until the above-mentioned date. She was then over

five and a half months pregnant, and had no trouble whatever. On examination the cervix was found in a good position in the upper vaginal tract. The uterus lay high up in the abdomen in normal position, and were it not for the cicatrix felt in the anterior fornix one would not be able to tell that the uterus had been vaginofixed.

Now about the criticisms of the operation that have appeared in this country. Though in one instance coming from high quarters, they have been based entirely on theoretical considerations. It has been said that the operation was illogical; that it disturbed the bladder, etc. As a matter of fact and observation, however, bladder symptoms do not follow the operation. As a rule, some functional disturbances, such as frequent micturition and tenesmus, accompany displacements of the uterus. It has been my experience that these disturbances either totally disappear or become markedly less after the operation.

Another criticism brought forward is that it fixes the uterus in a pathological antelexion. This point has already been touched upon and will be further discussed later. The criticisms that have recently appeared in Germany are of a much more serious nature. In three cases of pregnancy following the operation severe surgical interference was necessary to deliver the woman. In one case a Cæsarean section had to be done, and the patient died. But these difficulties occurred in patients operated upon by Dührssen's method, in which the technique is decidedly faulty, and I am pleased to state that I have never followed it. Dührssen's method, as you know, consists in making a transverse incision in the anterior fornix of the vagina at the vaginal junction of the cervix, in order to avoid injuring the bladder. The bladder is pushed up and the fundus is stitched to the flaps of the incision. The fundus is thus fixed to the vaginal vault just a little anterior to its central point. Taking from two and a half to three inches as the average length of the uterus, it can be readily seen how the fixation of the fundus at that point must throw the cervix far back into the hollow of the sacrum. When it does not do that it must force the uterus to double up, producing a very acute antelexion. It was the former condition that gave rise to the difficulty at labor. The cervix pointed backward and upward toward the promontory of the sacrum, so that it could not be reached. Now, in the technique followed by me the fundus of the uterus lies fully from two to three

inches further forward in the pelvic plane than by the Dührssen method. I make a longitudinal incision reaching from near the urethral meatus to the vaginal attachment of the cervix. The first fixation-suture is carried through the anterior aspect of the uterus about a centimetre below the insertion of the tubes, and is passed through the vaginal flaps near the urethral opening. The fundus is thus carried well forward and lies in pretty near the same position it occupies in the normal state. The excellent position of the uterus accomplished by the operation is not appreciable to the onlooker unless he makes an examination afterward.

Dr. T. G. Thomas and Dr. H. J. Garrigues, who did me the honor to be present at a couple of the operations, expressed great satisfaction with the position of the uterus disclosed to them by manual palpation. Owing to an accident in one case, a rare opportunity was afforded me of having an ocular demonstration of the exact position of the uterus. I was doing a vaginal cœliotomy for a diseased ovary and a retroversion. Through inadvertence on my part a small gauze sponge slipped off the holder into the peritoneal cavity. After making several ineffectual attempts to reach it with my fingers, I decided it would be wiser to search for it through an abdominal incision. I completed the operation in the usual way, and then made a short incision in the abdominal wall near the pubis. As soon as I cut through the peritoneum my fingers almost immediately came into contact with the gauze sponge lying against the posterior aspect of the fundus. I was myself surprised to find the fundus so high up in the pelvis, reaching within an inch of the abdominal parietes. In a recent number of the *Centralblatt für Gynäkologie* I learn that Mackenrodt himself has discarded his former method of vaginal fixation for another which he terms "vesico-fixation." The reasons he gives for the change of front are: that without entering the peritoneal cavity he has been able to obtain only 90 per cent. of permanent cures; that in order to obtain better results he would need to open the peritoneal cavity and bring about direct adhesion between the uterus and the vaginal walls. This adhesion would be so firm, he fears, that in case of pregnancy the same unfortunate results might obtain that occurred in a few of Dührssen's cases.

He has also had some bladder-disturbances in some of his cases. These are to be avoided by stitching the uterus to the peritoneum of the bladder! What ingenuity! What arguments! One

scarcely believes that they were offered seriously. Anyone who has closely followed the literature on the subject, and especially the polemic and bitter discussion between Dührssen, Winter, and Mackenrodt, may have an inkling of the motives that induced the latter to disinherit his first-born in favor of his second offspring. The fact is that although to Mackenrodt belongs the credit of practically carrying out Sänger's suggestion of stitching the uterus to the anterior vaginal wall, and of making a longitudinal instead of a transverse incision, his followers have out-distanced him in the improvements of the method. Winter operated exactly in accordance with his description, and had numerous relapses. He then modified the technique in much the same manner as the writer has done, and had invariably good results. A similar experience was gained by Schauta¹ and several other operators.

Mackenrodt laid great stress upon obliterating the vesico-uterine space by catgut sutures. To this step no doubt must be attributed the bladder-disturbances he has witnessed. I have paid no attention to the point, and my experience with the freedom from bladder-symptoms in my patients bears evidence to the wisdom of this course.

The technique I now follow differs in some respects from those followed by all other operators. It differs from that of Mackenrodt as follows: 1. In that the peritoneum is always opened. 2. In that the fundus is delivered through the incision. 3. In that the adnexa are directly treated as they would be by the abdominal route. 4. In that no attention is paid to the vesico-uterine space. 5. In that the uterus is stitched directly to the vaginal wall.

It differs from that of Dührssen and his followers: 1. In that a longitudinal incision is always made. 2. In that the uterus is sutured at a point a little below the fundus. 3. In that the uterus is sutured to the vaginal wall near the urethral meatus.

The very good results, both anatomically and clinically, I have obtained by my modifications justify me in their continuance and in recommending them to the profession. That the operation is capable of being further improved cannot be gainsaid. The one serious consideration regarding this method, and of all others, for fixing the uterus in a forward position is the behavior of pregnancy

¹ E. Wertheim: Zur Technik der Vaginalum Fixation des Uterus.

and labor should conception take place. In ventrofixation it is not uncommon to have disturbances during gestation, such as pain, abortion, and bladder-disturbances. A case is on record in which Cæsarean section had to be done to deliver the woman. The disturbances in Alexander's operation have probably been less than in any other method, though some have been recorded from time to time. In vaginofixation, if certain points are observed in the technique, there ought not to be any disturbances, as shown by my own three cases. Of course, I recognize the limitation of this experience. But a number of cases of pregnancy following vaginofixation done after a similar fashion have been reported abroad in which no trouble obtained during gestation nor during labor. The literature on this matter only just came to hand as I was finishing this article, and I have not had the time to analyze it thoroughly and incorporate it herein.

XVII. DISCUSSION ON SYPHILIS IN INFANTS AND YOUNG CHILDREN.

1. THE DIAGNOSIS AND TREATMENT OF EARLY AND LATE SYPHILIS IN CHILDREN.

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THE subject to which I have the honor of being assigned is one of such magnitude that I can only briefly call your attention to the principal features which characterize the disease syphilis and which tend to suggest or establish its diagnosis. Early and late syphilis in children may be of acquired or of hereditary origin, and inasmuch as neither the former nor the latter has been specified as the subject of my paper, I feel myself compelled to treat of both forms, especially as there are important differences between them, and such modifications of type and course as materially influence the questions of diagnosis and treatment.

ACQUIRED SYPHILIS. The receptivity of infants and young children to the syphilitic poison is as great as that of adults, and they are as readily infected. With them, however, the source of

infection not being sexual intercourse, the site of inoculation is most usually extragenital, particularly about the mouth, though it may be upon the genitals or on any other portion of the body. After the disease has been communicated, there is in children, as in adults, a period of incubation of variable duration—two to six weeks—and then the development at the site of inoculation of an initial lesion—the chancre. This may present all the characteristics of the same lesion in adults, having an indurated base and being either eroded or ulcerated, but more often in infants it is represented by a papule. Following the appearance of the chancre, there is a second period of incubation, during which there are no further symptoms, except the very important enlargement of the lymphatic glands nearest the initial lesion and the steady implication of the other glands; that is, a polyadenitis develops. At the end of four to six weeks, perhaps a little longer, a slight deterioration of the general health is noticed; the infant or child becomes restless, peevish, and irritable; a moderate elevation of temperature may be noted; if the child is old enough, headache and general pains are complained of, and after a few days a roseola appears over the body, but especially on the trunk. This eruption may be very slight or severe, remain a few weeks and disappear, or become merged into a papular eruption. When it disappears, a period of quiescence of variable duration may follow and be broken by outbreaks of papules, or of papular or pustular lesions, with the development of mucous patches in the mouth, of condylomata lata about the anus, vulva, or on surfaces constantly moist and in contact with each other. Iritis may occur, the long bones become affected, and, in other words, the one and other manifold and polymorphous symptoms pertaining so peculiarly to syphilis may arise and follow each other. After the development of these evidences of active syphilis there may be an entire cessation of all phenomena for a greater or less period of time, or there may be an immediate passage into the late or tertiary stage, with its grave cutaneous and other manifestations so prone to be of a destructive nature and to cause irremediable or at least disfiguring and lamentable results to the tissues involved, and so prone, when early and energetic treatment has not been carried out, to expose the patient to relapse after relapse, and to all of the dangers and vicissitudes of tertiarism. From the picture which has been drawn it can be seen that syphilis, when acquired by infants and children, differs

in no particular in its course, general symptomatology, and effects from the same disease in adults. It can only be said that in the former its manifestations are more intense and extensive and its effects upon the organism in general more severe, greater care being, therefore, necessary to ward off the material dangers due to its presence.

There are, however, occasions presenting themselves in practice when the important question arises as to whether an infant bearing the insignia of the disease is a subject of acquired or of hereditary syphilis. There may be no history obtainable as far as the parents are concerned, no history of a primary lesion, and even this having been present, it may have disappeared, so that there is no clue to the origin of the existing symptoms. Under these circumstances, the differential diagnosis between the acquired and the hereditary form of syphilis is not always easy; but in the majority of cases certain features aid greatly in arriving at the proper conclusion. If the infant has acquired its syphilis after birth, a chancre may or may not be present, but polyadenitis will be found, and the cutaneous eruptions appear only after the third month of life. The symptoms and course are, moreover, only those pertaining to the secondary stage of syphilis, and the general nutrition of the infant suffers to only a minor degree.

On the other hand, hereditary syphilis, having such a grave effect upon nutrition, will impress upon the infant a marasmic appearance; polyadenitis will be absent; the cutaneous eruptions begin much earlier, often a few days after birth—commonly about the third week, sometimes later, but yet within the third month of life. Pure secondary lesions will not alone be present, but generally tertiary symptoms coexist.

The question may, however, arise in regard to a child of more advanced age, or to one who has arrived at puberty, and we then find the individual hereditarily syphilitic is generally poorly nourished, infantile in appearance, younger than his age, both mentally and physically; it presents anomalies of development of the bones, possibly traces of interstitial keratitis, defective and notched teeth, enlargement of the liver, etc., whereas the subject of acquired syphilis is not poorly nourished, is well developed for his age, and is conspicuous by an absence of those other symptoms just mentioned. As far as the manifestations on the skin are concerned, they may be the same—tertiary lesions—and thus present no dif-

ferential peculiarities ; but it should be remembered that an eruption of lesions of the secondary stage appearing in late childhood is indicative of an acquired and not of an hereditary syphilis.

Of course the points of differentiation, which have been mentioned, vary within wide limits, may be very distinct, or only slight, and I do not mention them as being positive, but only as aids in many instances in which all other concomitant factors being appreciated and estimated, they may enable a definite conclusion to be reached. The importance of distinguishing between the acquired and hereditary syphilis is greater in infants than it appears upon the surface. The prognosis as regards the child is thereby materially influenced, and also that of other children born of the same parents ; while the recognition that the syphilis is hereditary will also possibly elucidate many obscure questions of diagnosis in both the children and the parents. Moreover, it certainly is not a slight matter for an infant born of healthy parents to acquire syphilis from some source or other, and then to infect some one or all the members of its family, occurrences unfortunately recorded far too frequently in literature. If the case is of hereditary origin, then the parents have nothing to fear, and any special precautions in regard to the relations between them and the infant are not of consequence or called for.

Besides the question just touched upon, there is another concerning acquired syphilis which has frequently been of medico-legal value. We may suppose that a child, previously healthy so far as known, develops syphilis shortly after having been vaccinated. How can it be determined that the symptoms are the outcome of inoculation of the disease at the time of vaccination, or the result of a latent hereditary syphilis awakened into activity by the influence of the vaccine virus ? We may in general state that if the child is inoculated at the time of vaccination, then, irrespective of whether a normal vaccine pustule has developed or not, there arises at that site two to four weeks later an induration or an ulceration with an indurated base. The nearest lymphatic glands become enlarged, and polyadenitis gradually ensues, and in from six to eight weeks a general eruption makes its appearance. On the other hand, normal course of vaccination lesion, no induration, no adenitis, development of constitutional syphilis very early and not later than in four weeks, is positive evidence that the child was syphilitic previous to the vaccination. Between these typical in-

stances, in which there is the presupposition that the whole course of the process has been under observation from the date of vaccination to the outbreak of the eruption, there are many possibilities, and at times the diagnosis may be most difficult. A child with latent syphilis may develop an induration in the scar; or the patient may not come under care until the initial lesion has disappeared, the early eruption has faded, and all the dates bearing upon the question have been forgotten. Under such circumstances it is necessary to examine carefully every point in the history; the child from whom the vaccine crust was obtained should be thoroughly looked up as to past and present history, and every other factor would need to be rigidly investigated in the patient's family and surroundings. Even then, however, it will at times be difficult to arrive at a definite conclusion, though the chronology of the eruptions of syphilis may furnish some aid, in so far that early manifestations of the disease occurring some years after birth, in childhood, or at puberty, would exclude their hereditary origin. The differential diagnosis between the cutaneous syphilides occurring in acquired syphilis and all those other eruptions which may resemble them is too extensive to be taken up, but there are some which should be mentioned, such as roseola or erythema infantile. Due to gastric derangement, intestinal worms, dentition, or arising in the course of some general and systemic disease, it occurs especially over the trunk and to a less extent over the face in the form of rose-red macules or a punctate rash. It persists for a few hours or a day or two, and then disappears without desquamation. On the other hand, the macular syphilide is of a bright or brown-red color, persists, as a rule, for several weeks, and disappears gradually in infants with a slight or considerable desquamation, and is preceded and accompanied by the polyadenitis and other systemic symptoms already mentioned. Erythema vacciniforme might likewise suggest the macular syphilide, but it appears one or two days after vaccination or not until the eighth or ninth, when pustulation is beginning. The macules are of a bright or purplish-red; but they are primarily isolated, show a tendency to coalesce and to form more or less large patches distributed over the extremities and trunk, and they disappear rapidly and without desquamation.

Other forms of erythema could scarcely enter into the category of differential diagnosis, nor could eczema, so common a cutaneous

disease in children. *Impetigo contagiosa*, however, if abundantly distributed over the body, located also on the palms of the hands and on the soles, accompanied, as it sometimes is, by enlargement of some of the glands near to the lesions, may be mistaken for a pustular syphilide. If, however, it is noted that the lesion representing the latter is a pustule on an indurated base—a papulo-pustule—and that when it is ruptured, or the crust forming upon it is removed, a sharply punched-out ulceration is exposed, which on healing leaves scars, it would not seem possible to confound it with that banale eruption, beginning as superficial flaccid pustular lesions of varying size, which are autoinoculable, tend to undergo peripheral growth with progressive central involution, which do not have indurated bases, do not ulcerate or leave scars, but disappear after a variable duration and history. Psoriasis may suggest the papular syphilide, particularly as desquamation of the specific eruption is not unusual in children. It should be remembered, however, that psoriasis is very uncommon in early childhood; that its special localization is over the elbows and knees and extensor surfaces of the extremities; that the palms and soles are very exceptionally attacked, no matter how extensive the eruption; that its lesions are superficial, tend to enlarge peripherally, and are subject to marked desquamation. In these capital particulars psoriasis differs altogether from a papular syphilide, and upon them the two processes may be easily differentiated one from the other.

Any number of dermatoses may be called into consideration in making a differential diagnosis from syphilis, but it appears unnecessary to do so in view of the general and special features of the disease which have already been enumerated. Syphilis, in its mode of inception, course, and characteristics, bears an impress distinctive and of its own, and, if careful attention is given to the phenomena which it presents, there should be little risk of confounding it with other banale or severe dermatoses of different origin.

HEREDITARY SYPHILIS. The diagnosis of hereditary syphilis presents in certain particulars many more difficulties than are met with in the acquired form of the disease, inasmuch as its symptoms vary greatly and the phenomena characterizing it are most atypical and irregular in occurrence. The manifestations are preceded by neither a primary sore, nor accompanied by polyadenitis; they are at times distinctive and easily recognized, but very often

insufficiently marked, masked, or doubtful, or such as can and do result from other nutritive disturbances or inherited dyscrasia, and it is only after careful study of the entire history of the case and the appearance of some characteristic lesion that the knowledge is obtained that it is syphilis with which we are dealing and not some other disease. This variability in expression and difficulty in recognition can be easily understood when the many factors upon which the former depends are borne in mind, such as the intensity of the foetal infection, the remoteness or nearness to the conception of the parental syphilis, the treatment received by the parents before or during the pregnancy, and many other factors, such as the general hygienic and material conditions affecting the mother during the growth of the child *in utero*, etc. Under such conditions it is practically impossible to give one succinct feature of hereditary syphilis, one that would cover all of its phases and variations, and it has, therefore, seemed to me preferable to give a series of sketches illustrating the various possibilities in the disease and the eventualities which may arise in early and late childhood.

Since the effects of the disease are exerted upon the foetus, the treatment of the subject has to begin with the child *in utero*. Owing to the intensity of the infection the pregnancy may result in an abortion or a miscarriage. This is usually seen in the earlier pregnancies, before the disease has become attenuated by time or treatment, and it may occur once or repeatedly before a child is born at full term and yet syphilitic. The polymortality of infants *in utero* is an important point in the diagnosis of hereditary syphilis, and when known or ascertained will very frequently suggest the nature or strengthen the presumption that some doubtful integumentary or other lesion presented for diagnosis is due to that disease.

Abortion due to syphilis occurs usually about the sixth month of pregnancy, sometimes earlier, sometimes later. I have frequently found that it took place about the third month, and in fact varied mostly from the second to the fifth or sixth month. When syphilis has been acquired by the mother during pregnancy, death of the foetus occurs somewhat later, though it may be carried to full term and be born with the evidences of the disease. When abortion or miscarriage has taken place, no characteristic symptoms are seen on the cutaneous surface, except possibly a few bullæ on the palms and soles, but the foetus is macerated, the skin comes

off easily, the surface is livid and purplish, and on autopsy some lesion in the viscera may be found.

The child may, however, arrive at full term and be stillborn or die shortly after birth without there having been present any objective symptoms indicative of syphilis. In such cases the history of a succession of abortions or miscarriages, as just referred to, is the only factor suggesting the diagnosis, though on post-mortem visceral lesions indicative of the disease may be discovered.

On the other hand, infants have been born at full term bearing the insignia of syphilis, though there were only residua of lesions which had run their course *in utero*. Cases are thus recorded in which synechiæ, in consequence of an intrauterine iritis, have been observed, as well as over the body pigmentation due to a cutaneous syphilide.

Again, parental syphilis produces a child alive at full term and having evidences of the disease upon it, or it may be entirely free from such and develop symptoms only a few weeks later. The majority of syphilitic children fall into this category. When born at full term with syphilis the infant may be so markedly marasmic as to be incapable of living, or the infection may not be so intense, and the child is small and weazened, is senile in appearance, the skin is wrinkled, the fatty layer hardly or not at all developed, the hair short, the nose sunken in, coryza or snuffles present, and an eruption of variable type is distributed over the skin or appears a few days later. On the other hand, the baby may be born healthy and well nourished and without any indication of syphilis. It may remain in this condition for a few weeks or months, and then die suddenly or in a convulsion, without any cause discoverable during life or on autopsy.

More commonly the child remains well for a few weeks or months, but about the third week, or inside of three months, it becomes emaciated, peevish, and irritable. A few days later an eruption appears on the skin, the voice becomes hoarse, a purulent discharge takes place from the nose, and fissures form at the corners of the mouth. The marasmic condition progresses steadily, and a shrunk and senile appearance invests the child.

These brief sketches thus show the varying influence of syphilis upon the child both during its growth *in utero* and after its birth, and the manifestations of the disease and its course show equally marked variations in character and type and importance.

It is not possible to divide the cutaneous and other manifestations of inherited syphilis into a secondary and a tertiary stage. They very commonly coexist even *in utero*, perhaps at birth, or at any rate in the earlier months of the disease, and it is only in children who have survived their syphilis for some years that the lesions presented by them are typical of any definite stage, they then being such as pertain to the tertiary period of the disease. The cutaneous phenomena occurring in inherited syphilis are very similar to those which develop in the acquired form. They may originate *in utero*, and the child may be born with one or other type of eruption, or their first appearance may take place a few days, weeks, or months after birth. It may be said that, in general, the cutaneous manifestations of inherited syphilis are more hyperæmic, more diffuse, and cover more territory than in the acquired form of the disease. Gummatous and destructive lesions appear very early, even *in utero*, and are more generally distributed, multiple, and symmetrical in the first years of life, though subsequently they are similar in extent and character to those seen in acquired syphilis. The earlier cutaneous eruptions are of the macular, papular, vesicular, pustular, and bullous forms. The bullous syphilide, or pemphigus syphiliticus neonatorum, may be present at birth or develop within the first six weeks. It may exist alone, or in conjunction with macular or pustular lesions, may be distributed more or less generally over the body, but more often it occupies particularly the palms and soles. When located upon these latter surfaces, and accompanied by a macular or maculopapular eruption on other parts of the body, this bullous syphilide is diagnostic of syphilis. The lesions themselves are symmetrically distributed, are variable in size and shape, begin as brownish-red infiltrations, upon which the flaccid bullæ form. Their contents are at first cloudy, later purulent, and the lesion itself is encircled by a narrow, coppery-red infiltrated zone. It may enlarge peripherally, or dry into a crust, or it may rupture and expose a moist eroded base. The bullous syphilide is not infrequently accompanied by outbreaks of multiple gummata, which simulate furuncles and run a rapid and destructive course. It would be impossible to confound this syphilide with any other bullous eruption, even though it may exist alone. Pemphigus simplex neonatorum appears between the second and the fourteenth day after birth. It has no special localization ; its out-

break affects in no way the general nutrition or health, the bullæ being the whole disease. It usually runs a course of eight to fourteen days, though sometimes longer, and it occurs very commonly in an epidemic form, and is unquestionably contagious.

Impetigo contagiosa, with its superficial situation, its want of localization, its entirely benign character and course, could scarcely be considered, and the same may be said in regard to many other eruptions to which infants and young children are subject.

The pustular syphilide is not uncommon, and appears usually before the second month of life. Though occupying especially the face and the lower extremities, it may be generally distributed over the body. Its lesions have a tendency to form groups about the mouth and on the face. The palms and soles may be occupied by groups of these pustules, and when they occur about the nails they may cause their destruction. The lesions themselves are small, seated on a deep-red infiltrated base, tense, and resisting; remain unchanged perhaps for several days, and finally dry up into crusts, or rupture and expose a superficial ulceration. On the face, it would be easily possible to take this syphilide for an eczema. Still, in eczema there is simple erosion, not ulceration; weeping is present; the crusts are only slightly adherent; there is an absence of the deep brown-red infiltration, an indefinite limitation to the affected area, and the presence of more or less itching.

Impetigo contagiosa would be distinguished by the absence of ulceration and its superficial seat, by the tendency of the individual lesions to peripheral growth and central involution, by its discrete occurrence and by the short-life history of each efflorescence, and its autoinoculability.

The vesicular type of eruption is usually coexistent with the bullous or pustular syphilide. It is located especially about the mouth, though it may also occur on other parts of the body. The individual lesions are seated on a brownish-red infiltrated base, are grouped, do not tend to coalesce, but remain distinct.

The papular eruption may be the first manifestation of the disease on the skin, or it may evolve from the macular. It is distributed generally over the body, the lesions being flat, of variable size, red-brown or coppery in color. On the palms and soles, and also on the legs, they show a tendency to fuse together and form a diffuse, brown-red, exfoliating infiltration, which on the former surfaces constitutes a valuable diagnostic symptom of hereditary

syphilis. With the papular syphilide mucous patches and condylomata are usually associated. The latter occur at the junction of the mucous and cutaneous surfaces or where there is moisture and more or less intimate contact. They will thus be met with particularly at the corners of the mouth, about the anus, vulva, and inguino-scrotal region, though also in other places. Of variable size, they are grayish-pink or dark-brown, flat, fissured, or ulcerated, exuding an offensive secretion. They are peculiarly indicative of syphilis and are easily recognized. It is owing to their presence at the corners of the mouth, and the consequent fissuring and ulceration which occur, that the radiating cicatrices at the angles of the mouth are seen in children with hereditary syphilis. When all the concomitant symptoms are taken into account, the papular syphilide is easily recognized. The absence of, or at least slight desquamation, the affection located on the palms and soles, the brownish, coppery-red color, the absence of excentric growth, the condylomatous changes, and the mucous patches, would exclude psoriasis. The large size of the lesions, their dry character, and the absence of weeping or of other exudative symptoms, and of itching, would suggest that they did not represent an eczema. An urticaria could not be mistaken for the syphilide, as its lesions are pink or white, perhaps bright red; they are œdematous, not infiltrated, appear acutely, and are evanescent in duration and itch intensely. An urticaria pigmentosa might, however, be regarded as a papular syphilide, as it begins in early childhood or infancy, and its lesions are brown-red in color and leave pigmentation. But it is essentially chronic; its efflorescence can be called into existence by simply irritating a pigmented spot; the general health is unaffected, there are no mucous membrane lesions, and it is entirely uninfluenced by treatment.

The macular or erythematous syphilide, an early eruption, appears within the first three months of life, usually accompanied by the specific coryza. It may be very slight or profuse, beginning upon the abdomen and invading the entire body. The lesions are discrete, but may become confluent, and their early change in color to a coppery or brown-red and the formation of irregular patches on the chin, the folds of the neck, and the buttocks are diagnostic of syphilis.

Mucous membrane affections are very constant features in early inherited syphilis. The specific coryza—snuffles—may be present

at birth or develop later, preceding or accompanying the cutaneous eruption. It produces a difficulty in breathing, the child snuffles, and there is a muco-purulent and finally purulent discharge from the nostrils, which, excoriating and irritating the upper lip, dries into crusts. It may not produce any destructive results, but yet may lead to necrosis of the bones, perforation of the septum, and the development of an offensive ozæna. The specific coryza may in its early stages be of doubtful diagnosis, and could be taken for an ordinary cold, but the appearance of cutaneous and other symptoms soon indicates its nature.

One of the most constant occurrences in early hereditary syphilis, and a most characteristic and diagnostic symptom, is osteochondritis located at the junction of the diaphysis and epiphysis of the long bones. Osteochondritis may originate *in utero*, or it may not develop until after birth, and it affects especially, but not exclusively, the bones of the leg, thigh, and arms. There may be a single lesion, but more often it is multiple and symmetrical. It is characterized by an abrupt, round, or globular swelling of the end of the bone, which partly or entirely encircles the shaft. The surface is smooth, though sometimes irregular or ridged. The epiphysis may be generally expanded at its junction with the shaft or present a ringed swelling. The lesion may become absorbed and disappear under treatment, or, the cartilage being destroyed, growth of the bone ceases, and a shortened, deformed limb results; or, the epiphysis becoming separated, an apparent paralysis and uselessness of the limb result for a time. Suppuration may take place, followed by ulceration of the skin; entire separation of the epiphysis may ensue, and it may project through the ulcer.

The bones of the fingers and toes may likewise be affected in the early months, but the similarity of the syphilitic dactylitis to that of tubercular origin is too great for it to be of any diagnostic value in itself.

Besides the symptoms mentioned, it may be added that in early hereditary syphilis there may be visceral lesions also. The liver, spleen, etc., the lungs and organs of circulation, etc., may all be affected; or the eyes, the ears, the testicles, etc., may become involved, but they do not present any special diagnostic points which would allow the majority of them to be referred to syphilis as a cause without all other existing symptoms were taken into consideration. The late or tertiary manifestations seen in the inherited

disease are of the type of those in acquired syphilis, except certain ones which occur in the form known as syphilis hereditaria tardiva. The tubercular syphilide may appear in early life, but uncommonly, and it appears more often some years after birth. When it appears as an early eruption it is distributed extensively over the surface, being more generalized than is the case later on, when it resembles the same lesions in acquired syphilis, being grouped, occupying a circumscribed territory, and tending to ulceration and extension in a serpiginous manner. As far as the deep gumma is concerned, it may occur, but it is uncommon before the third year or later.

The manifestations of hereditary syphilis which I have mentioned as suggesting or demonstrating the diagnosis of that disease are only a few of those which can and do occur. But they are the most usual ones met with, and are sufficient to facilitate the recognition of the process in the majority of cases in early life. But later on there are others which come up in which the points for diagnosis are somewhat different, and to these I would also call attention. A child may survive the early accidents of the syphilis, may apparently recover, the disease being seemingly extinct, or at the eighth to the tenth year, or at puberty, or even later, it may present symptoms of one kind or another which are directly referable to the disease and which are known as expressions of late hereditary syphilis.

The cases entering into this category may be divided into two classes :

1. Those which have had lesions and manifestations of the disease early in life, followed by a period of quiescence of variable duration, which is interrupted by an outbreak of tertiary lesions.

2. Those in whom no known symptoms developed during infancy, but in childhood, at puberty or later, evidences of late syphilis come into existence.

The factors upon which the diagnosis of syphilis in either of these classes can be based are of various kinds and importance. Among these is the general nutritive condition of the patient. Subjects of late hereditary syphilis are poorly nourished, thin, pale, anæmic, and weak ; their muscular system is insufficiently developed ; they are said to have grown slowly, to have begun walking late ; they are infantile, are retarded in development, perhaps even mentally and to the extent of being idiots. In a boy,

the testicles at the age of puberty are undeveloped ; in a girl, the breasts are rudimentary, menstruation is delayed and only appears much later than the normal, while in both there is no growth of the pubic and axillary hairs, or, in the male, of the beard. Deformities of the bone may also be present, cranial protuberances of the frontal or parietal bones, or marked asymmetry or hydrocephalism may exist. The bones of the nose are perhaps sunken in ; or there may be remains of an early osteochondritis or other changes in the phalanges, etc. ; or the tibia may be curved in contour with anterior convexity, or entire portions of the skeleton may be deformed, as the pelvis, thighs, thorax, etc.

Very commonly there are cicatricial stigmata on the skin. The scars may be round, serpiginous, or polycyclic in outline, or represent some segment of a circle, or they may be grouped on various regions. Peculiarly indicative of syphilis are they when they occur at the angles of the mouth as radiating linear cicatrices. In the throat and on the hard or soft palate scars may also be found, or the residua of destructive lesions, such as perforations, etc. Besides all of these there are those special changes known as Hutchinson's triad, which consists of :

1. Ocular changes.
2. Deafness.
3. Dental deformities.

In regard to the eyes, there may or may not be a history of a previous inflammatory or other pathological condition, which has left leucomata of the cornea or possibly choroid atrophy. More commonly there is interstitial keratitis, sometimes the results of or an iritis. The appearances characterizing the former have led to its being known as ground-glass cornea. The iritis may be of the ordinary type, or gummatous, or there may be as results anterior or posterior synechia.

The disturbance in the hearing when due to hereditary syphilis is peculiar in that there are no lesions explaining it. The deafness occurs brusquely, rapidly attains a high degree of intensity, and is persistent.

Dental deformities are very frequent, but not constant features. There may be retarded growth and development of the teeth, or malformations, but any diagnostic value to be attached to these latter pertains only to the permanent teeth. There may be erosions of the body or crown, or micro-odontism, or early and rapid

destruction of certain ones of them ; but more characteristic of the disease are what are known as "notched teeth." This lesion occurs symmetrically, affects especially the median incisors, and is represented by a semilunar or crescentic loss of substance of the cutting edge. These notches, from use and attrition, become less apparent as the child grows older, and the teeth then appear short and worn down as in old age. The cutaneous lesions in this stage of the disease are only such as belong to the tertiary period of syphilis, and do not differ from those seen in the acquired form. They may be ulcerative or non-ulcerative, and are particularly of the tubercular type—the cutaneous gumma. They occur perhaps more frequently on the face and on the legs, though all other surfaces may be affected. The lesions are arranged in groups or segments of circles, or in an annular form, and tend to serpiginous extension or growth. They originate insidiously and without pain, and either undergo involution without ulceration, leaving only a superficial, atrophic scar, or they ulcerate and lead to extensive destruction and ulceration of the affected part. The deep gumma may also occur, but infrequently, and in its evolution, course, and effects does not differ from the same lesion due to an acquired syphilis.

Adenitis, especially of the neck and submaxillary region, sometimes takes place. The affection is non-inflammatory, and represents permanent glandular hypertrophies, without any tendency to suppuration. It develops slowly, is painless, and the glands having attained a certain size remain stationary for years.

The various phenomena described and mentioned constitute the factors upon which the presumable diagnosis of a late hereditary syphilis should be based. The anomalies of mental or physical development, the bone, dental, or other malformations, the cutaneous or other lesions may be all present in a given case, or there may be only one or two or more, and though at times the diagnosis is perfectly evident, yet at others it will present great difficulties. It should be remembered that the majority of the lesions referred to may also be due to other causes than syphilis, and, in consequence, too much stress should not be laid upon individual symptoms, but the diagnosis should be based rather upon their association together, the whole facies of the patient and the disease, and upon the facts obtained in his previous history.

I may instance the unreliability of any single individual symp-

tom by mentioning the interstitial keratitis. It is a valuable diagnostic point in conjunction with others, but not of itself alone, as it may result from various morbid processes other than syphilis; it may be a result of trophic disturbances, and it has even been known to develop in the course of the acquired disease. The same objections may be brought against the deafness, the skeletal, and other malformations, etc., so that though all or any of them may suggest the diagnosis of late hereditary syphilis, yet, for them to be decisive, investigation of the parents' and patients' history must be made for corroborative evidence, or minute examination of other children in the same family may have to be made. Only when all the facts obtainable have been carefully obtained and judged will it be possible to formulate an absolute diagnosis.

TREATMENT. The treatment of syphilis in infants and children differs somewhat in the acquired and in the hereditary form of the disease, owing to the differences in course of the two and in the general somatic conditions which exist in an individual healthy at birth and later acquiring syphilis, and in one more or less saturated with the poison from his very inception and subjected to its influence throughout the entire period of gestation. The therapeutic and other measures to be made use of do not, however, differ so much in themselves as in the manner in which they are applied. In the acquired form of the disease the treatment for infants and children is practically the same as for adults. It should be carried out in the same regular and careful manner and for the same length of time—two to three years, or perhaps longer—being at variance only in the dosage of the mercury and iodide of potassium given, and in the greater care required as regards the hygienic and material conditions of the child. On the other hand, in dealing with hereditary syphilis, we must begin with the child *in utero*. It being known that there is parental syphilis, either from confession on their part or from objective evidences on their persons, or owing to their having had one or more syphilitic children previously, or if the presumable supposition of their infection is entertained, owing to a succession of abortions without cause, and possibly other suspicious facts obtained from their history, then it is advisable to treat them, even when there may not be conception, in order to protect the next and future pregnancies and to enable a healthy child to be born.

Should the woman become pregnant during the time she is under

care, her treatment should continue during the entire period of gestation; or should parental syphilis be discovered only during the pregnancy, then the mother's treatment should be instituted and continued rigorously at least until the birth of the child. It has been abundantly proved that the treatment of a syphilitic woman during pregnancy does not increase the dangers of that condition or expose her to the occurrence of abortion or of other complications. On the contrary, it has not alone prevented repeated death of the products of conception, but has proved to be a most powerful means of saving the child and enabling it to come into the world in a healthy condition, or at least affected by the disease in a degree not inimical to its life.

The medicinal agents required for the treatment of the pregnant woman are mercury and iodide of potassium, the preponderance of the one or the other depending upon the stage of the disease. From my own experience I fully agree with those who attach the most influence to the use of inunctions systematically carried out. Each inunction should consist of 45 grains to 3j of mercurial ointment, and the course should be carried out with the watchfulness, periods of intermissions, etc., which are so well known and which have been so well and so repeatedly described as not to require reiteration now. The hypodermatic injection of some one of the salts of mercury has, in later years, received much praise, but the method is painful and objectionable to the majority of patients. When, on account of the prejudices, etc., of the woman, neither of these procedures can be made use of, recourse may be had to the mixed treatment—hydrargyrum bichloridum and iodide of potassium—or to some one of the other salts of mercury. In conjunction with the medicinal treatment, all other usual care and attention should be given to the hygiene, nutrition, and somatic health of the woman. Good food, exercise, proper rest, absence of alcohol, etc., are all indicated for the pregnant syphilitic woman as for the non-syphilitic.

The parental syphilis being unknown, and no treatment having been followed during pregnancy, but a child is born alive with indubitable evidences of syphilis, or such develop in a few days or weeks, the question of its care becomes much more complicated. Outside of the purely medicinal side of the subject there is the important one to be considered of the nursing or not by the mother, or of its being artificially fed, or being given out to some

nurse, and in addition the question of its general hygiene offers much study. In general, we may say that the mother should always nurse her child, if she has milk enough, or, if not, then artificial feeding should be resorted to. The mother in nursing her syphilitic infant does not run any danger of being infected by it, the results of observation embodied in Colles's law having demonstrated that a woman who has given birth to a child with hereditary syphilis cannot contract the disease from it. Under no circumstances should a syphilitic child be given to a healthy woman to nurse, and this assertion refers equally well to the mother of an infant who has acquired syphilis after birth. In such a case she is not protected by Colles's law and can be infected by the infant.

The child should also be placed in the most healthy surroundings possible, and every means should be employed to counteract the tendency to malnutrition and debility. Cleanliness should be particularly enjoined, particularly of the mouth, the nose, the folds and flexures of the body and of the anal region, etc. The former may be washed out with a boric-acid solution, or one of thymol (1 to 500); the latter should be kept dry and dusted with some absorbent and antiseptic powder.

The medicinal treatment is confronted with many difficulties, depending upon the nature and degree of the existing symptoms. The baby may have at birth or shortly after both secondary and tertiary lesions, or such as are of grave nature, and the result of the treatment will depend greatly upon the choice of remedies employed. There are only mercury and iodide of potassium which are known to exert a direct influence upon syphilis; the former being especially indicated in the secondary stage, while the latter, either alone or in combination with the mercury, is more applicable to the lesions characterizing tertiarism. Whichever is used, however, it may be conveyed in various ways to the infant. The child being nursed by the mother, the treatment may be carried on indirectly through her milk. The mother may receive inunctions of mercurial ointment, or the iodide may be given alone by the mouth or in combination with mercury. Experience has shown that the child is benefited by this indirect method, and analysis of the milk of a woman receiving inunctions has shown the presence of mercury. The same observation has been made in regard to the iodide of potassium, and it has in addition been found in the baby's urine.

The indirect method of treating the child is certainly beneficial and often of great value. Still, I have seen it fail many times, and have frequently found it advisable to treat the child independently while continuing the mother's treatment.

If inunctions are used as a method of direct treatment, the mercurial ointment may be rubbed in as is done for adults, or it may simply be smeared on the infant's bandage and allowed to be rubbed in by the movements of its body. Fifteen to twenty grains of the ungt. hydrargyrum should be used once daily in this manner, and the length of time the course is continued will depend upon its effects upon the child and the disease. I have frequently seen good results from the simultaneous administration of iodide of potassium and the use of inunctions. From two to five drops of a saturated solution may be mixed with a little milk and given with a spoon. Should the evidences of syphilis disappear, the general nutrition of the child become improved, then the inunctions may be continued with proper intermissions for the required length of time—two to three years—the patient being closely watched, every relapse or fresh outbreak being made the occasion of a necessary change of treatment to iodide of potassium, or some other iodine compound, the syr ferri iodidi, etc. At the same time, and during the continuance of the general treatment, tonics, good food, etc., should be administered.

All the other salts or forms of mercury may be used, if preferred. Hydrarg. cum cretâ is very much to be recommended, or calomel in $\frac{1}{4}$ to $\frac{1}{2}$ grain or less doses, alone or in combination with iron, or the protoiodide, the bichloride, or the tannate. Each will serve a good purpose when properly employed.

There are two other methods of treatment which have been recommended and used, viz., the hypodermatic medication and mercurial baths. The former can scarcely obtain wide use in infants and children owing to its painfulness and possible objections on the part of parents. The latter is, however, frequently of value. The baths are particularly indicated when there are skin lesions—pemphigus, condylomata, etc.—and they consist of bichloride of mercury and chloride of ammonium in water. The dose will vary according to the severity of the lesions and the reaction of the child to the treatment. Usually 8 to 10 grains of each in 7 to 8 gallons of water are sufficient, though it may be increased or diminished according as the infant withstands them, does or does not

show evidences of weakness, depression, or irritability after their use. The bath lasts ten to fifteen minutes, and it may be given, according to the exigencies of the case, every day or every second, third, or fourth day. Occasionally the bath produces an erythema or an eczema, which if slight is of no consequence, but if severe may cause its discontinuance. The treatment of the later stages of syphilis occurring during childhood differs in no way from that employed in adult life, except in the dosage of the drugs. The iodide or mercury alone, or better in combination, are essentially necessary in conjunction with the most careful hygienic and other care, and the patient requires most particular watching on the part of the physician, so that every feature of the disease may be noted and combated.

As far as the local treatment of the patient is concerned, a prime consideration is the utmost cleanliness and a mild, general antiseptis of the surface. If ulcerations are present, aristol, iodoform, iodol, hydrarg. ammoniatum, etc., can be used as a dressing. Mercurial plasters are indicated for joint or bone lesions. Irrigation with boric acid or thymol solutions, or of bichloride of mercury (1 to 1000), or with a 1 to 2 per cent. solution of ichthyol, are advisable when snuffles are present. Mild solutions of nitrate of silver may be used for mucous patches, while absolute cleanliness and dryness and calomel in a powder are advisable for condylomata. I have derived much benefit from balsam Peru or ichthyol in 10 per cent. solution in dealing with the fissures at the angles of the mouth. Should eye, ear, or other grave complications arise, they should receive also appropriate local care in addition to the general syphilitic treatment. It is unnecessary to refer more *in extenso* to the local therapeutics of the disease. I would only say, in conclusion, that notwithstanding we have such definite and powerful remedies against syphilis as mercury and iodide of potassium, yet the results obtained from them are not to be regarded as invariably successful. The mortality of syphilitic children is enormous—one-third to one-half dying—even though these remedies may be used; but notwithstanding this fact, when subjects of the disease, they should receive such benefit as may be derived from them.

XVIII. DISCUSSION ON SYPHILIS IN INFANTS AND YOUNG CHILDREN.

2. THE PATHOLOGY OF SYPHILIS IN THE NEWBORN.

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IN considering the pathological anatomy of syphilis in the newborn we are led to believe, from clinical observation and post-mortem examinations, that it presents the same characteristic peculiarities of morbid anatomy as in the acquired form ; that its origin may be regarded just as definite, its character just as perspicuous, and its realm just as broad. It follows precisely the same course as if in consequence of infection subsequent to birth, the inheritance being the legacy, the result of contamination, and is the disease itself, and not a modification of it nor a diathesis.

The first and most important question which arises in the presentation of this subject is that of its dependence upon germ infection. In the acquired form there can be no doubt that a bacillus is the cause of the malady which wanders from the point of inoculation to the various organs and tissues of the human frame and produces the different manifestations, although its demonstration has been difficult. Lustgarten has done the most pioneer work in this field, but owing to facts which, interesting enough to mention here, namely, the scarcity of the bacilli, their similarity to the smegma bacilli, and the absence of a guide as to the location of the bacilli in consequence of the infrequency of giant cells in syphilitic formations, its demonstration has not been conclusive.

Yet, by analogy to the other chronic infectious granulomata, we are justified in assuming the bacterial theory, it being to-day the best working hypothesis in studying or explaining the pathology of syphilis, for every fact in its history points unmistakably to a parasitic origin intimately associated with its cause, and we believe that in the near future the bacillus of syphilis will be isolated, and its morphology, physiology, and precise relationship to the causation of the disease firmly established.

In relation to the hereditary form our knowledge is far from

satisfactory, most of the evidence at hand being that the streptococci, while not the cause of the condition, play a very important part, particularly when a fatal result occurs.

In these fatal cases it is not improbable that the cause of death is in consequence of mixed infection, the severity of an attack depending upon the quantity of the infecting germs and not upon their character, and to the influence exerted by the condition and constitutional endowment of the child.

The hereditary transmissibility of syphilis is possible in two different ways: The embryo may be syphilized from the first, through the infection attaching itself to the spermatozoon or the ovum, or both, at the time of impregnation, giving rise to genuine hereditary infection, or else the fœtus, healthy by conception, becomes contaminated from the blood of the mother, the bacilli passing over from the maternal to the foetal circulation, producing what is termed intrauterine infection. While this latter possibility seems improbable to some authors, the fact that it has been demonstrated that the spirilla of relapsing fever and the bacilli of anthrax are capable of such transmission, the possibility of a similar transmission may be justly ascribed to the bacteria of syphilis.

Such instances may be of rare occurrence and the fact contested, yet it is theoretically correct to conceive that a mother who becomes syphilitic during pregnancy infects her offspring through the blood channels.

In either case the development of the embryo becomes frequently arrested, resulting in abortion or in the birth of a syphilitic child. These indiscriminate miscarriages of living but syphilitic children often show that the placenta is coincidentally and extensively diseased, especially the foetal portion.

Fraenkel found upon microscopic investigation that the extremities of the villi were augmented in size, with nodular processes, and that they were filled with small, nucleated cells which were especially prolific in the centre of the villous spaces conforming to the axis where the vessels usually take their course.

The villi of the chorion are imbedded in inflammatory exudations, which take the form of gummatous consolidations, characterized as placentitis gummosa, and the evidence of extravasations of blood, remote and recent, explains the occurrence of placental degenerations and hemorrhages. The amnion, chorion, and decidual coverings are generally opaque and thickened, and frequently ad-

here to one another in places. The placenta, considered as a whole, is enlarged, increased in weight, with a firm, dense texture.

The conditions mentioned, together with the action of the virus upon the developing tissues, are the agencies which cause the death of the embryo and subsequent abortion, which is most common about the third month of pregnancy; however, should the foetus survive until it attains viability, it may then be born alive or perish *in utero*. In the latter instance the foetus generally shows signs or vestiges of the infection which has destroyed it, varying materially with the activity of the virus in the parents and the consequent degree of syphilization of the embryo. The skin is discolored, brownish, livid, macerated, and easily separable.

The epidermis may be raised in large bullæ upon the palms and soles, a probable manifestation of intrauterine pemphigus.

Occasionally an osteochondritis may be recognized, especially marked in the lower epiphysis of the femur. Then, again, all indications as described may be entirely wanting.

When the child is born alive it may die immediately after birth or within the first few days of life from the intensity of the disease, visceral lesions, failure of nutrition, or intercurrent mischief, or the child may be born apparently healthy, plump, and well nourished, the contamination giving no evidence of its presence for weeks or months, yet it is seldom delayed beyond the second or third week of life, when the child begins to waste, presenting a shrunk, wrinkled, and senile aspect, the subcutaneous fat being deficient, the skin having lost its transparency, which becomes cadaveric in color, and, upon investigation, it is found that the peculiar pallor, without exciting suspicion of latent disease, is due to a grave deterioration of the blood.

The changes observed in the blood by Loos were indicative of a marked anæmia characterized by a diminution and an alteration of the red blood-corpuscles and a very noticeable increase in the number of the white, with a dissemination of megalocytes, microcytes, poikilocytes, and nucleated erythrocytes, the latter being present at times in enormous quantities, the important and essential feature being the constant and usually extensive leucocytosis, which depreciated the quality of the blood to such proportions as to be injurious to life.

Dr. Woehnert, of Buffalo, some of whose work I have seen, has also found in his investigations of the blood in cases of hereditary

syphilis having a marked cachexia with an enlarged spleen and amyloid liver, pronounced pathological changes. The blood was characterized by a decided oligocythæmia in which the red blood-corpuscles were greatly decreased, ranging from 1,800,000 to 3,000,000, by a marked oligochromæmia in which the hæmoglobin was greatly diminished, varying from 30 to 50 per cent. Poikilocytes, megalocytes, and microcytes were present in an unusual number, particularly the latter, and the presence of numerous nucleated red cells were manifested by nomoblasts, megaloblasts, and microblasts.

There is doubtless a great deal yet to be ascertained respecting the chemical, physiological, and pathological changes which take place to any excess in the blood, and just what relation these alterations bear to certain saprophytic microbes or pathogenic germs is still a hypothesis for future consideration.

It is noteworthy that the secondary lesions of hereditary syphilis usually manifest themselves at about the same period after birth as those of the acquired form after inoculation, and that the pathological alterations of tissue which occur are of the same nature ; however, these changes in the child are more hyperæmic and active, interstitial hyperplasia is more diffuse, and usually larger surfaces involved. The young and growing tissues seem fairly steeped in the virus, which thrives most vigorously in virgin soil. The first symptom to attract our attention is usually snuffling of the nose in direct contradiction to the fact that in the acquired disease it is practically subordinate or rare. The most reasonable explanation of this axiom is that the child, before the period of its birth, has been living the life of a fish, submerged in a fluid, and oxygenated by osmosis and absorption similar to the mechanism of respiration as performed by aquatic animals, while its respiratory apparatus, the lungs, are dormant or functionally inactive. At birth, following the circulatory transformation which occurs in the foetus, no system feels the change so much as the respiratory, lined with a delicate mucous membrane at full development, which is naturally sensitive in the extreme. It is not unreasonable to suppose—in fact, to assume—that the changed conditions of respiration cannot but act not only as a stimulant, but in those by predisposition susceptible, as an irritant. Therefore, it is justifiable to suppose that it is the irritation upon the respiratory tract which determines the development of the lesion which we assume to be

a mucous patch, and which is the result of the shock or brunt of first atmospheric contact.

The discharges at the onset from an excessive blood supply to the nasal mucous membrane induced by respiration are thin and serous, gradually acquiring a greater consistence, becoming viscid and tenacious, resulting in the formation of crusts, the frequent detachment of which, owing to the vascularity of the Schneiderian membrane, predispose to hemorrhage.

A post-mortem examination of such an infant, which I had an opportunity to make, revealed the presence of a mucous patch seated upon the turbinated bone which had apparently lost its epidermal covering and was concealed by a copious secretion of a serous and purulent character. Microscopically, the local changes produced were the result of an inflammatory process of a mucous membrane, showing an extensive cell-proliferation and liquid exudation, with enlargement of the papillæ and dilatation of their vessels. Bacteriologically, numerous colonies of micrococci of a dumb-bell shape were discernible, which took a pronounced stain with fuchsin.

The first syphilides generally appear in the newborn either at birth or within four weeks of life, frequently coinciding with the coryza; they may be macular, papular, pustular, or bullous, and, like the secondary manifestations in the adult, the general eruption is symmetrical in distribution and transient in duration.

The mildest and most benign efflorescence is represented by the macule, which is of a bluish-red, bright, or pale rose-color, circumscribed but not sharply defined, irregular in contour, and of variable size, appearing by preference, according to Diday, upon the abdomen, the lower part of the chest, neck, and flexures of the limbs. Upon section of such a part of the skin we have observed a moderate increase in the thickness of the epidermis, and pronounced changes in the corium, affecting mainly the papillary layer, which, from the depressed condition of the papillæ, its characteristic appearance was no longer visible. The bloodvessels were slightly dilated with a marked cell-infiltration around them, and there was likewise an exhibition of cell-effusion about the sweat ducts, hair follicles, and sebaceous glands.

Next in benignancy is the papule with its various modifications, which are but degrees of the same anatomical lesion, and of these the mucous tubercle is the most common, occurring wherever there is warmth and moisture, in such localities as around the anus, on

the scrotum, in the groins, axillæ, and between the toes. It is but a papule, ulcerating on its surface. The papulo-squamous eruption is similar to that of the acquired disease and shows itself either on single parts or over the entire surface ; the patches, which are circular and superficial in character, are slightly raised and covered with scanty, delicate scales. The papular form varies in size from a pin's head to that of a pea or even larger, and may be scattered everywhere or arranged in groups often capped with tiny scales, a drop of pus, or serum. Their color is usually of a copper hue or a brownish-red, especially after long existence due to the pigment in the rete Malpighii and corium.

The next most benign lesion of infantile syphilis is the pustule, a rarer manifestation than either the macule or papule, indicative of mixed infection and generally of profound cachexia, so often the prelude to death. It displays a great diversity of appearance, owing to variation in size, the degree of purulency, its arrangement, and distribution, and is usually attended with glandular enlargement and associated with affections of the serous membrane. Its anatomical alteration resembles in general that of the papule, the stratum mucosum, papillæ, and corium being filled with indifferent cells ; the fluid exudation is found mainly in the epidermal layers and partly limited to the cells themselves.

The bullar syphilide is a sign of still greater import. The number of cases with these lesions in adults are comparatively few, while in children it is of frequent occurrence and is the precocious lesion of hereditary syphilis. It is characteristically developed upon the hands and feet, the principal seats being the palms and soles. As a rule, it commences in spots of a violet or dark-purplish color, upon which appear within the course of forty-eight hours a number of vesicles that gradually enlarge and coalesce, passing into the form of a bleb, many of which soon rupture, leaving behind superficial ulcers, or else the cutis beneath is intact, red, and eroded.

Cornil attributes this frequent association of this pemphigoid lesion in the child with syphilis to the delicacy of the epidermal layer, which is easily separated and raised owing to its slight resistance and its previous immersion in the amniotic fluid, a condition said to be peculiar to the skin shortly after birth ; however, I am inclined to believe that there are other additional physiological peculiarities of intrauterine life that assail and predispose these

parts, which are the most movable, and in consequence subjects them to more friction from motion with the fluids in which they are bathed than any other portion of the body, thus determining a source of possible irritation ; moreover, these parts are the distal extremities, which are most feebly nourished, and by mixed blood may still further increase their vulnerability to pathological expressions and aid to cause the determination of this cutaneous peculiarity to the palms and soles. Such an eruption in an infant not only reveals the character of the disease but the degree of infection, and the unfortunate baby generally dies from exhaustion in spite of the most assiduous care.

The nails, which are so clearly related to the epidermis—in fact, derived from it at about the third month of foetal life—are frequently attacked in the inherited disease, primarily as an inflammation of the matrix interfering with the nutrition of the nail, which becomes chipped, wrinkled, and of a whitish or violet color, and is often painlessly detached, leaving evidence of suppuration and ulceration; or else the nail-plate may lose its smoothness and gloss, becoming much thicker than normal, dry, brittle, crumbling, and much distorted. The thickening is seen mainly at the free border and is less common than the deficiency in nutrition. The teeth, likewise appendages of the epidermal layer of embryonic life, show marked structural modifications, being characterized by malformation and retarded evolution, which I believe to be proportionate to the degree of infection, and their early decay and premature shedding to be evidence of their low grade of vitality. The permanent ones when involved possess well-known characteristics which have no counterpart in the acquired disease, and those usually affected are the upper central incisors, which exhibit a central indentation or notch in the place that should be occupied by the middle tubercle. The lower incisors are frequently pegged and the canines more pointed than normal. Hutchinson contends that they are the result of an arrest in development in the first-formed portion of the dentine. These defects in the incisors of inherited syphilis are sometimes coincident with grievous disfigurement caused by the falling in of the bridge of the nose from destructive processes, the result of inflammatory changes, and when associated with parenchymatous keratitis and scars at the corners of the mouth, the seat of recent rhagades, the teeth may be regarded as a type which not only suggests suspicion, but are pathognomonic of hereditary taint.

We now come to changes in the nervous system as a consequence of this inheritance. Their symptomatology is modified by conditions due to the fact that they occur during the developing era, in contradistinction to what occurs in the acquired form, where the structure is fully developed or even degenerating. The lesions themselves are devoid of special characteristics, which renders their recognition and separate study more difficult. No part of the cerebro-spinal axis escapes, and it is customary to refer to them in systematic order. We recognize diffuse and localized infiltrations and endarteritis, with its attending train of possibilities—embolism, thrombosis, sclerosis, or softening, as the case may be.

Meningitis is not uncommon, the pia mater being most often concerned, primarily or secondary to other changes. In the acute form the clinical distinction of it from those of tubercular type is in the absence of corroborative lesions, most difficult, though the subject has invited much attention. In the chronic form we have the meningeal hemorrhages so frequent in intracranial syphilis.

The most common of the cerebral lesions is undoubtedly the endarteritis, with its characteristic thickening, rigidity, and dilatation. It is upon this condition that softening and other encephalic changes and a large class of palsies depend.

It is beyond the scope of this paper to go into detail, but no phase of the subject is more interesting than the study of the relationship between this nutritive interference and the retardation and non-development of the cerebro-spinal system. While difficult to demonstrate, in the opinion of the writer there can be no question that many of the various mental deficiencies and nervous disorders in infancy and childhood depend upon this taint and consequent organic changes.

Hydrocephalus is a not uncommon evidence of cerebral syphilis in connection with other lesions, and occasionally without apparent connection with anything save the history, or suspicion and absence of rickets. It calls for no special note.

The paralyzes that occur are common, and should be carefully studied. They are the outward manifestations of meningeal and cerebral lesions of the character referred to. Their peculiarity is that they are apt to be recurrent in the same part, and again multiple and not simultaneous; otherwise they present no peculiarity; they may be temporary, but are often permanent. Changes in the

spinal cord and peripheral nerves are rare and little studied. They are of more interest to the clinician than the pathologist.

Affections of the appendages of the eye are of rarity, and when existing do so in connection with other more important encroachments. Of the affections of the eyeball, the most frequent, and frequent it is, is that of the cornea, viz., interstitial keratitis. It has long been recognized and considered under the name of scrofulous keratitis. It produces the well-known ground-glass cornea from infiltration, and is accompanied by ciliary injection and symptoms of constant irritation. The ultimate changes are the development of separate foci of cellular action, which finally coalesce, involving the whole cornea. It occurs invariably in childhood, and more often where there are other evidences of the taint, and particularly in those of vitiated or broken health. Its course is peculiar in that it is sluggish both in development, course, and decline, and in that the structure never fully regains its integrity. It is a formidable condition.

The iris and choroid are so rarely attacked, save when secondary to corneal trouble which masks them, that it is not considered sufficiently pertinent to refer to them further.

As no part of the economy escapes the possible ravages of this malady, the ear is likewise assailed; the external mostly so, the internal rarely, the middle occasionally. The labyrinth is the seat of changes most common and best understood, and is the cause of deafness. They consist largely of periostitis of the walls of the vestibule and canals, changes in the auditory nerve from cell-filtration and alteration in character of the endolymph. This is followed by the usual course—necrosis, hyperplasia, sclerosis, and, but rarely, suppuration. The organ is destroyed. The attack is characterized by its remarkably rapid onset, deafness often being complete in twenty-four hours, its slow course, running years, and its invincibility to treatment.

Changes in the middle-ear are scarcely considered, though they undoubtedly exist to a greater degree than is supposed. The alterations are similar and usually occur in connection with specific disease in the pharynx, nose, and larynx.

The pathological changes in the structures of the osseous system in the hereditary form chiefly point to the cranial and long bones. The lesions are of two kinds, the atrophic and the osteophytic. In the cranium the atrophy generally occurs in those localities

subject to pressure, which leads to absorption, and consequently pronounced depression of the inner surface of the bone. The process is termed *craniotabes*. The hypertrophy are subperiosteal deposits of new bone, which form nodes or bosses in special regions, as upon the four processes that bound the anterior fontanelle. Then, again, in the early months of childhood, the morbid process is peculiarly frequent and active near the junction of the diaphysis and epiphysis, at the distal end of the long bones. The changes are most often found in the cartilaginous layer which joins the epiphysis with the shaft. Swelling, nodes, and rings deforming the diaphysis are of common occurrence.

The bones generally affected are those of the forearm, leg, arm, and thigh. The diaphyso-epiphyseal lesion is an *osteochondritis*, a disease of the bones characteristic of infants, while *osteoperiostitis* is a late manifestation, showing itself in children that are able to walk or in young adults. The *osteochondritis*, when in progress, often produces a condition of helplessness, the child being unable to manage its limbs, and recognized by Parrot as syphilitic pseudo-paralysis.

In infancy these almost pathognomonic characteristics of epiphyseal lesions and cranial deficiencies are without question the result of or explainable by the developmental activity of the parts, as compared with the bone lesion in the acquired form, and in substantiation of this theory it is to be noted that this activity has long since ceased in the parts referred to, and where bone lesions do occur in the acquired type it is the result of a localized infection possibly accidental in its selection.

The general cachexia is sufficient to account for the frequency of the visceral lesions in infants. The abdominal organs are the principal seat of the morbid process. In the liver the alterations are due to cell-infiltration, extensive fibroid induration, and diffuse gummata. In the spleen to hyperplasia, which may be temporary or permanent, and rarely to gummata; and in the kidneys, which are seldom involved, to congestion and lardaceous degeneration.

To go into the pathology of hereditary syphilis in all its expressions would involve more time and repetition of detail which is common information.

It has been my purpose, in my imperfect way, of fulfilling the duty assigned to me by referring more especially to the patho-

logical changes of the most pronounced clinical phases of the malady and to give solely my views as I understand them, based upon my own observations as the facts appear to me.

XIX. DISCUSSION ON SYPHILIS IN INFANTS AND YOUNG CHILDREN.

3. THE NERVOUS MANIFESTATIONS OF HEREDITARY SYPHILIS IN EARLY LIFE.

BY B. SACHS, M.D.,
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WITHIN a very recent period, cerebral and spinal affections in the adult, due to syphilis, have been studied so carefully that it is often possible to make the diagnosis of luetic disease without reference to the evidence of an initial infection. The nervous manifestations of specific disease in early life have not been so firmly established, nor are they nearly so frequent as in more advanced years. Hensch, Erb, Strümpell, and others who have studied syphilitic diseases with the greatest care are agreed that specific disease in the brain or spinal cord of children is rare.¹ It is well to note at the start that syphilis, acquired or hereditary, is a very insignificant factor in the causation of a number of the well-known nervous affections of childhood. In the hereditary and family diseases involving the nervous system, such as the progressive dystrophies and hereditary ataxias of the spinal and the cerebellar type, syphilis is the least important factor; and I am also firmly convinced that it is of little moment in the majority of cases of infantile cerebral palsies, though to some of these it may bear a causal relation; but of this later on.

Hereditary syphilis is much more apt to be exhibited by disease of the teeth, of the bones, by affection of the skin, of the glands, or of the liver, and by a general disturbance of nutrition, than by extensive disease of the nervous system. The last named would seem to be involved either if the hereditary taint is a very strong

¹ Some of the "syphilitic palsies" of children are due to specific osteitis and periostitis, and not to lesions in the nervous system.

one or if there has been a predisposition to nervous or mental disease in the family of the syphilitic patient. Fortunately, many of those children who are born with a serious syphilitic taint die early, and thus we may account in part for the greater rarity of those manifestations which are due to the graver forms of infection in the parent.

Syphilitic disease in early life can be recognized by the same symptoms that characterize luetic process in the adult. Whether the disease becomes manifest in the brain or in the spinal cord, aside from those symptoms which point to the site of the lesion, we have others which indicate its specific character. Among the latter we must include the alternations between recoveries and relapses, and the disproportion between the extent of the disease and its intensity. Syphilis of the nervous system is very apt to be a cerebro-spinal affection; it may involve a small area of the brain and of the spinal cord, but in many instances the syphilitic process may affect the cortex of the brain, the interpeduncular space, the medulla oblongata, and the spinal cord throughout its entire length, and yet at one or more of these levels, if not all, the disease is of such slight intensity that it does not produce the marked symptoms that are associated with other morbid processes. I cannot express this more tersely than by saying that cerebro-spinal syphilis is an *extensive disease of slight intensity*. If we were to examine a child exhibiting a mild form of palsy involving both upper or lower, or all four extremities; if this same child presented symptoms of cortical irritation, such as localized spasms in a paralyzed part; if, in addition, speech were imperfectly developed or had become impaired without being completely lost; if one or more ocular muscles were paralyzed—this combination of symptoms would point to a multiple cerebro-spinal syphilis.

Among the cerebral affections due to hereditary syphilis we may note the small part it plays in the development of idiocy, epilepsy, and early dementia (Bury¹). Strümpell² has called attention to the evident relation between hereditary syphilis and general paresis occurring in very young subjects. Careful clinical observations proving the causal relation of hereditary syphilis to the conditions just mentioned are rare enough. Satisfactory autopsies are still rarer. It is probable, however, that vascular diseases, endarteritis

¹ Judson S. Bury: *Brain*, 1883.

² Strümpell: *Neurolog. Centralblatt*, 1888, No. 5.

(even during the foetal period) may lead to defects in cerebral development, atrophy, and sclerosis of the hemispheres, with defective development of the entire cerebro-spinal tracts. Barendsprung¹ has recorded instances of early and extensive meningeal hemorrhages during the foetal period ; but these are of theoretical interest only, as the children are generally born dead. Hydrocephalus is occasionally of specific origin. Specific pachy- and lepto-meningitis has been reported in a few cases. Some authors claim that specific encephalitis (and sclerosis) is a frequent condition ; but Recklinghausen,² in a series of 1600 autopsies on children, including 45 cases of syphilis, found but two cases of encephalitis.

If we add that gummata in the brains of children have been reported by Henoch, Wagner, and others ; that Waldeyer and Koebner³ have reported a case in which a periostitis interna of the frontal bone had caused a considerable exudate to be formed—we have recorded the chief changes underlying cerebral syphilis as it occurs in early infancy.

But note again that if we take all cases of idiocy or of epilepsy into account, a very small proportion indeed can be attributed directly to a syphilitic taint. Clinically, the evidence of the specific origin of such a condition would depend largely upon the co-existence of other manifestations of hereditary syphilis, such as bone-lesions, gummata of the viscera, etc. A word more relative to specific endarteritis, which, since the time of Heubner's studies, has been regarded as the chief anatomical changes underlying cerebral syphilis. Heubner himself did not refer to its occurrence in children, but the studies of Chiari,⁴ and a particularly good report by Kohts,⁵ prove that it may occur in very young subjects. The latter gives the histories of two children, both about one and a half years of age, who had sustained apoplectic seizures, one at the age of three months, the other at about sixteen months. In the brain of both there was a general sclerosis of the hemispheres (due to early nutritional changes) and a widespread specific endarteritis. The basilar artery of the one child contained a thrombus 13 mm. in length, yet, curiously enough, the clinical symptoms were not those due to the occlusion of this artery.

The paucity of autopsies bearing upon this subject compels us,

¹ Barendsprung : "Die hereditäre Syphilis," 1868.

² See Kohts. Henoch : Festschrift, Berlin, 1890, p. 42.

³ Virchow's Arch., Bd. lv.

⁴ Chiari : Wiener med. Wochenschr., 1881.

⁵ Kohts : loc. cit., p. 46.

for the time being, to consider the results of clinical investigations in determining the influence of syphilis upon the cerebral diseases of children. My own studies, and those of Peterson,¹ have shown that syphilis is a rare etiological factor. In more than 2000 cases of infantile cerebral palsies, in which the cause of the palsy was inquired into most carefully, but two cases could be attributed to hereditary syphilis.

I wish to insist upon this point in contradiction of the statement by Erlenmeyer,² that congenital syphilis is a frequent factor in the causation of these diseases. There was a history of syphilis in a few cases examined by him, and he inferred hastily from this accidental finding that syphilis was a common cause. But our own experience, which happens to be the most extensive yet recorded, has shown this inference to be entirely wrong. These infantile palsies are, moreover, so easily accounted for by the difficulties during labor, by the influence of the acute infectious diseases of early life, that we need not take refuge in syphilis as a possible etiological factor.

One of the few instances of hereditary syphilitic brain disease resembling an ordinary infantile palsy, which I have had occasion to see, was that of a child now four years of age, which, at the age of two, without fever, without convulsions, had gradually developed a paralysis of the right arm, the right leg, the right half of the face, and a ptosis of the left eye. This crossed paralysis—a rare form indeed in children—was, unlike other early apoplectic seizures, gradual in its onset, and pointed to a thrombosis in a branch of the posterior cerebral artery supplying the crus, and this thrombosis was unquestionably due to specific endarteritis. The region affected was a different one from that involved in other infantile cerebral palsies, in which the cortex is more apt to be the site of the disease. While I had no hesitation in making the diagnosis of syphilitic hemiplegia in this child, the case is so unique that it proves to be the exception to the rule.

Ocular palsies, which are the most common manifestation in the adult of acquired syphilis, occur every now and then in children, and are in all probability due to syphilitic disease. These ocular palsies may be the only symptom of hereditary syphilis, but are

¹ Sachs and Peterson: *Journal of Nervous and Mental Disease*, May, 1890; see also *New York Medical Journal*, May, 1891.

² Erlenmeyer: *Zeitschrift f. klin. Medizin*, vol. xxi. p. 348.

more frequently associated with hemiplegic or paraplegic disturbances due to the same etiological factor. A recent author¹ has gone to considerable trouble to collect cases of hereditary syphilis in which ocular palsies constituted the only symptom, and while there may be some special satisfaction in making such researches, the result is hardly worth the labor involved, for these cases prove nothing more than that the specific process, which is generally a very widespread one, may occasionally be very limited. Ocular palsy, pure and simple, may be a very rare manifestation of hereditary syphilis, but the same palsy in conjunction with spastic paraplegia of the lower extremities is not nearly so rare. It is probable that these paralytic disturbances of the eye-muscles in the young are due either to a thickening of the meninges and compression of the root-fibres of the third, fourth, or sixth nerve at their point of emergence from the base of the brain or to a specific form of neuritis affecting some, and not all, of the nerve root-fibres. It is also probable that the nuclei occasionally undergo primary degeneration, or that they may become diseased in consequence of very slight hemorrhages from specifically diseased blood-vessels. Such ocular palsies of specific origin are amenable to treatment by the usual antisyphilitic remedies ; but if these have been of no avail, the disturbance in vision may be corrected by surgical procedures.

Neoplasms of specific origin situated in any part of the brain may give rise to a large variety of symptoms due to the variation in the site of the tumor. Gummata have been observed in various parts of the cortex in the vicinity of the aqueduct of Sylvius, and in the pons and medulla as well as in the spinal cord ; but it is well to add that these cases in children are extremely rare. The suspicion of the syphilitic character of the tumor in a child's brain can be corroborated only by the antecedent history, and, to a limited extent, by the effect of mercurial and iodide treatment. I wish to repeat, however, a caution expressed many years ago, that all forms of neoplasm are subject to improvement under this mode of treatment ; or, to put it more correctly, the symptoms to which they give rise often subside under antisyphilitic remedies.

There are few positive objective signs of brain syphilis which would assist us in differentiating between it and other forms of cere-

¹ Zappert (Vienna) : *Archiv. f. Kinderheilkunde*, 1896, Bd. xix. p. 161.

bral disease. Among such symptoms we include a complete immobility of the pupils, which is more frequently present in syphilis than in any other affection of the central nervous system, and persistent headaches, which are apt to precede the onset of motor or sensory disturbances.

The *spinal* forms of hereditary syphilis lead frequently to the development of a spastic paraplegia which comes on early in life without any special assignable cause, which is subject to recoveries and relapses, and is often associated with cerebral symptoms, such as palsy and a complete immobility of the pupils, all of which point to an extensive cerebro-spinal affection. Friedmann,¹ recognizing such cases, has published them under the title of "Relapsing, Probably Specific, Spastic, Spinal Paralysis." In a case reported by him of a boy five years of age, the birth was entirely normal, though the head is said to have been relatively large. Four weeks after birth a skin eruption appeared, which was vesicular at first, ulcerative later on, and terminated in desquamation. The child went through the various phases of mental development in an entirely normal fashion. At the age of three months there was difficulty in moving the arms and legs. Three months later the right arm could be moved, and at the age of one and a quarter years all four extremities appeared to be entirely normal. In the second year, the child having learned to walk well, paralysis again developed in the left arm, and disappeared once more after six weeks. From the second to the fourth year the boy was healthy; in the fourth year he complained of headache, particularly in the occipital region; gradually his gait became weaker and weaker, and he began to drag the left leg, frequently falling in the attempt to walk. There was slight difficulty in micturition, and the legs were rigid. In this case the alternation between recoveries and relapses and the irregular development in the march of the symptoms were brought out in a characteristic fashion.

Similar cases have been described by Hoffmann² and myself.³ My own case is that of a girl, aged six years, who was under my observation in 1893. The child had passed through an entirely normal development, but at the age of five years she began to walk in a peculiarly stiff manner, and the mental development was

¹ Friedmann: *Zeitschr. f. Nervenheilkunde*, Bd. III. p. 182.

² J. Hoffman: *Neurologisches Centralblatt*, July 1, 1894.

³ Sachs: "The Nervous Diseases of Children," 1895, p. 337.

somewhat retarded. On examination I found a spastic paraplegic gait ; spastic paraplegia of the lower extremities, more marked on the left side ; the left upper extremities slightly paretic and rigid ; both knee-jerks were exaggerated ; triceps and wrist reflexes lively on left side ; the pupils were unequal—both reacted imperfectly to light and during accommodation. The syphilitic origin of this trouble was evident from the irregular order of the symptoms, from the imperfect reaction of the pupils, and also from the fact that the mother at the time of examination presented the symptoms of tabes, and gave the history that three children had died early in life ; that she had had two miscarriages, and that at the age of thirty she had a left hemiplegia. A more complete clinical proof of syphilis, both in the child and in the parent, could hardly be demanded.

As for the morbid lesions underlying spinal syphilitic diseases, it is unnecessary to go into detail except to say that we are apt to find specific thickening of the pia over any part of the central nervous system with the formation of gummatous growths ; that we may have a specific endarteritis, not only in the bloodvessels of the brain, but, as has been shown more recently by Williamson¹ and others, also in the bloodvessels of the spinal cord. As a result of this disease in the bloodvessels either definite areas of softening are established or minute hemorrhages occur. If the disease is limited to the spinal cord a specific lepto-meningitis may lead to a diffuse form of myelitis involving a part, though not nearly the whole, of the cross-section of the cord. The more frequent occurrence of spastic rather than flaccid forms of syphilitic spinal paralysis is due, first, to the fact that the region of the lateral columns is invaded by the meningeal infiltration in the majority of cases ; and, secondly, the postero-lateral division of the spinal segment has a poorer blood-supply than the ventral half—hence the greater liability to disease in the presence of arterial changes.

If we compare the study of the clinical symptoms of hereditary syphilis of the nervous system with the results of pathological studies we are bound to conclude that the morbid process may give rise to a variety of symptoms, and that the most characteristic feature both of the morbid process and of the clinical symptoms is not the involvement of the brain or the spinal cord, but

¹ Williamson : On the Relation of Diseases of the Spinal Cord to the Distribution and Lesions of the Spinal Bloodvessels. H. K. Lewis, London, 1895.

that the morbid affection is widespread and yet is of slight intensity¹ at any given level of the central nervous system ; also that it is subject to great variations—hence the frequent recoveries and relapses.

XX. DISCUSSION ON SYPHILIS IN INFANTS AND YOUNG CHILDREN.

4. EARLY AND LATENT SYPHILIS IN INFANTS AND YOUNG CHILDREN.

BY L. DUNCAN BULKLEY, AM., M.D.,
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WHILE syphilis seems to be certainly on the increase in this country, at least in the cities, it seems to me that hereditary syphilis is much less commonly met with than it was some years ago. The reasons are quite clear to see. The profession at large has become much better acquainted with the disease both in its recognition and treatment, and is also more fully alive to the dangers of its transmission. From the more widespread knowledge of the disease it has resulted that more cases are recognized at an early period, and prompt and active treatment instituted ; while the more precise and definite ideas of treatment developed of late years accomplish more in arresting the disease. I think that the laity, in the middle and upper classes, as well as physicians, are more careful in guarding against the transmission of the disease than they were ten or twenty years ago ; in private practice, at least, I find patients, both men and women, extremely solicitous lest they should procreate syphilitic children, and most anxious when conception has taken place during the infective periods of the disease. It happens from this that I am seeing much less of inherited syphilis than I did some years ago.

The more common recognition of cases of *extragenital syphilis* also operates, together with the general care given to the disease, in the way of minimizing the number of cases of innocent infantile syphilis other than hereditary. Some years ago it was not very

¹ Detailed evidence of this will be found in previous writings of the author. See N. Y. Med. Journal, Sept. 19, 1891, and Brain, vol. xvi. 1893.

uncommon to find cases, and even groups of cases, where the disease had been acquired by vaccination, but these instances are almost unknown now in this country ; infantile infection, by means of circumcision, has almost ceased to occur among us, as also by the feeding-bottle, etc. With further enlightenment on the part of the profession and laity, family syphilis will steadily diminish, although there will probably always be a certain amount of the disease developed sporadically, as there will always be ignorant and careless persons in our midst.

It is of the utmost importance that syphilis in infants and young children should be recognized and treated at the earliest possible moment ; this both on account of the infant and also for the safety of those around. Within about a year I have had under my care in private practice a lady who contracted chancre within the right nostril from her ministrations to her syphilitic grandchild, who afterward died of the disease ; her syphilis ran a pretty severe course, as it had been neglected, the disease not having been recognized on account of the unusual location of the primary lesion. The remark by Fournier should always be borne in mind, that " nothing is so dangerous to its surroundings as a syphilitic child." Too great care cannot be exercised against the infection of others, which may occur in a thousand unsuspected ways, as literature abundantly demonstrates.¹

For the sake of the child, also, syphilis should be recognized in its earliest period, and very active treatment instituted and faithfully and persistently carried out. I believe it is quite possible for the child with infantile or hereditary syphilis to overcome the disease and to develop into a healthy and strong individual. But, on the other hand, neglected or imperfectly treated syphilis in the child may and often does result in most distressing after-conditions. Illustrations of both of these I have seen more or less frequently.

I am somewhat skeptical in regard to latent syphilis in the ordinary acceptance of the term ; I mean syphilis which does not manifest itself at all until later in life. I believe that syphilis always displays some of its signs within six months after infection has been received, whether by inheritance or by inoculation. In many instances the earlier phenomena are very slight and transient and self-limited, and so may escape the observation of those not

¹ "Syphilis in the Innocent," by L. Duncan Bulkley, A.M., M.D., New York, 1895.

pecially trained in this branch. In many other instances the symptoms are kept in check by more or less efficient treatment. In this way cases undoubtedly occur where the principal lesions do not appear until adolescence, as I have occasionally seen, but I have never been able to satisfy myself that there had not been some previous intimations of the presence of the disease.

Those well acquainted with syphilis and who have watched patients with the disease for a number of years know well how uncertain are its manifestations ; how often a certain class of symptoms will predominate ; or, again, how they may be delayed or appear at most unexpected times. There is perhaps no disease in which it is more difficult to give a prognosis, for the course and results of the disease depend so greatly upon the individual, his constitution, mode of life, fidelity to treatment, etc. Syphilis will be latent for many, many years if neglected or improperly treated.

In regard to treatment, I rely almost wholly upon inunctions in recent syphilis in infants and very young children, and I know no better way of employing it than in the old-fashioned manner, beneath and upon the abdominal band. I have never feared salivation, and do not know that I have ever known of any harm from mercurial inunctions pushed to any reasonable extent ; the yielding of the symptoms will generally be an adequate guide in regard to the degree of treatment.

I am convinced, however, that harm very often results in them from the too early abandonment of treatment, or from pursuing it in an inefficient manner ; and this point cannot be too strongly impressed upon the general practitioner, who commonly controls the family medical matters. It is now well established that syphilis requires a prolonged treatment, and one cannot be too careful that these little sufferers receive the best aid which science can afford in their helpless and direful plight. I cannot say just how long treatment should be carried out, but two or three years at the least is the accepted time for the treatment of adults, and the child should have sufficient treatment to be sure that the disease has been overcome.

With the possible recurrence of later symptoms the child, like the adult, should be again put upon a carefully graded course of treatment, sufficiently prolonged to insure against a recurrence of the trouble. When the child has sufficiently advanced in years to

admit of remedies being given advantageously by the mouth, I believe we get the very best results with a mixed treatment, made up in the sweet wine of iron. The syrup of the iodide of iron seems to be about a specific in the later lesions of syphilis in children ; but to be efficient it should be pushed boldly, attention being also carefully paid to the alimentary canal.

Syphilis is one disease, whether it occurs in the infant, young child, or adult, and its apparent latency at times renders it often difficult to overcome ; but it is one which of all diseases best rewards the careful, painstaking, and persistent efforts of the medical man to whom its treatment is intrusted.

DISCUSSION.

DR. EMIL MAYER, of New York : I would call attention particularly to the fact that when syphilitic disease is present in the mucous membrane of the nose and pharynx it can often be diagnosticated from its appearance, although it may not be in an active state, and would emphasize the fact that syphilis may remain latent a long time. It has occurred to me very recently to see a case of syphilis present in the third generation. Had the physician, who had treated a brother of my patient, known of this, he might not have met with the catastrophe which he did—terrible septicæmia and death following operation for stricture. An elder brother came to me for a certain amount of hemorrhage from the throat, and examination revealed what appeared to me to be a syphilitic throat. Some weeks later his father came to me with depression of the nasal bone, evidently due to specific disease, following, he said, a blow on the nose. I asked him if anybody else in the family had a similar condition, and he replied that a sister had. So the father and his sister had inherited syphilis, and the third generation were also syphilitic. Recently an instance of late hereditary syphilis came under my notice in a child of nine years. It had had no symptoms of the disease before. The mother was found also to have tertiary syphilis. The child presented a remarkable condition : ulceration in the nose, in the left groin, on the thigh of the left leg, and on the tibia of the same leg.

DR. E. D. FISHER, of New York : I can agree perfectly with the remark of Dr. Sachs, that it is very difficult to say whether a cerebral hemiplegia is due to hereditary syphilis. I think that in the majority of cases it is not ; that it is more likely to be due to compression from meningeal hemorrhage. A most interesting point to me in connection with hereditary syphilis relates to symptoms which may

develop at the age of ten or twelve, such as optic atrophy or deafness, occurring without apparent cause. In such cases we should go carefully into the history of the patient, and learn whether we have not to deal with a case of hereditary syphilis. Regarding treatment, to be brief, I agree with Dr. Bulkley. The only difference is that I give my iodides freely, and my iron freely, but separately. The iron may not be indicated except for special conditions.

XXI. INFECTION IN THE NEWBORN.

BY M. A. CROCKETT, M.D.,
BUFFALO.

THE object of this paper is to invite a closer observation of newborn children. The average physician knows very little concerning those diseases developing during the first four weeks of life. This ignorance is due largely to the fact that the young baby does not receive the careful personal attention of the physician. After confinement, the child, both literally and figuratively, is handed to the nurse, and through her filters all further information concerning its condition. If the baby becomes ill enough to attract someone's attention, the doctor examines its condition, and perhaps discovers a disease already well advanced. Eröss found that out of 496,000 deaths of newborn children, 45,000, or 9½ per cent., were ascribed to congenital weakness—a term which, like “heart-failure,” is a convenient cloak for ignorance.

Most authorities admit that the mortality among the newborn is very high. Smith (*Diseases of Children*) says that in England, where there is an accurate registration of births and deaths, among every 100 children born alive there are four or five deaths during the first month. He quotes a French author who places the mortality of the first month at 10 per cent. Uffelmann (*Handbuch der privat. u. oeffentlich. Hygiene des Kindes*, 1884) says that the mortality of the first four weeks is about equal to the mortality of the second and third years of life added together. One-quarter of all the deaths up to the age of five years occur in the first month of life. Eröss, taking sixteen large European cities as a basis for computation, states that 10 per cent. of children born alive die

during the first four weeks of life. Oesterlen (*Handbuch der Med. Statistik*, 1874) states that the mortality of the first four months makes up 42 per cent. of the deaths of the first year of life. In this country the extreme laxness in reporting births makes the statistics on this subject almost useless. The important part of the subject, however, is not one of figures. The question to consider is, to what chief danger is the newborn child exposed, and how can the physician diminish this danger?

Eröss, of Budapest (*Archiv. für Gyn.*, Bd. xliii., H. 2), has recorded observations upon 1000 infants, and in 430 noted fever temperatures. From his private practice he selected forty-two infants, so situated as to receive the best of care, and in twelve instances found fever present. He states that in most of the children the rise of temperature was the first sign of disturbance, and without the use of the thermometer his attention would not have been attracted to the subject. Out of the 430 feverish infants, 220 presented evidences of disease of the cord or navel.

Fischl (*Zeitschrift für Heilkunde*, Bd. xv., H. 1) studied the histories, sections, and bacteriology in twenty-two newborn, and concludes as follows:

1. During the first four weeks sucklings are not uncommonly infected by septic microbes. The clinical and anatomical signs of this infection may be those of an acute or subacute gastro-enteritis, capillary bronchitis, or lobular pneumonia.

2. The histological character of the organic changes consists in necrosis of cells and interstitial inflammation, with a tendency to hemorrhages. The microscopic changes in the mucous membrane of the gastro-intestinal canal may be slight, or entirely wanting, even in cases in which the symptoms are most severe.

3. By means of culture and inoculation-tests, streptococci and staphylococci are found in various organs, especially in the lungs.

4. The paths of infection are the navel-wound, with or without alterations in its healing, the food, and inspiration.

5. Acute dyspeptic diseases and genuine pneumonias are rare, and their prognosis is much more favorable than when gastro-intestinal or pulmonary symptoms accompany septic infection.

Tavel and Quervain (*Centralblatt für Bakteriologie*) describe two cases of hemorrhage occurring in the newborn in which bacteriological investigation of the blood was made. In the first case, a purulent discharge from the umbilicus was noticed a few days after

birth, and multiple hemorrhages occurred ten days later. The post-mortem examination showed double pneumonia. The examination of the organs and blood revealed the presence of large numbers of streptococci. In the second case, hemorrhages were found beneath the dura and in the pericardium. Large numbers of staphylococci were present in the blood.

Escherich says (*Wiener klin. Wochenschr.*) that trismus neonatorum is due to local infection of the umbilical wound, and reports three cases, in each of which there was septic inflammation of the navel.

Hirst (*Medical News*, January 9, 1892) reports the result of section in five children dying from septic infection through the umbilicus. In his opinion the average physician does not recognize the fact that septicæmia of the newborn is common.

In connection with this subject I can report three cases. Briefly stated the details are as follows:

CASE I.—Child born after a normal labor, and for the first six days of life all went well. The umbilical cord was cut short and dressed with borated cotton, the stump being cast off on the fifth day. On the seventh day restlessness was noticed, and severe eclampsia followed a few hours later. Temperature, taken for the first time at the onset of the convulsions, was found to be 101°. Repeated convulsions marked the course of the disease, death occurring in fourteen hours. There were no signs of inflammation around the umbilicus. Although no post-mortem was allowed, both the positive and negative signs pointed strongly to tetanus neonatorum. The convulsions began forty-eight hours after the fall of the cord, the usual period of inoculation of the tetanus bacillus.

The last two cases I am permitted to report through the courtesy of my friend, Dr. Snow.

CASE II.—Normal labor. Death took place on the seventh day from septic peritonitis. Marked suppuration around the umbilicus was present.

CASE III.—Forceps case. Cellulitis developed in some slight wounds caused by the instruments, and also around the umbilicus. Death on the eleventh day from peritonitis.

These cases and the opinions of distinguished specialists teach us that we must recognize septic infection as an important factor in infant mortality. It is also important to bear in mind that the symptoms produced by infection are varied and obscure.

Among a thousand infants, Eröss found 22 per cent. suffering from navel infection. Doktor, of Budapest, showed how the percentage of infection could be lowered by more careful attention to

the dressing of the cord. He studied 1200 children before he arrived at a satisfactory result. He found the following to be the best method: With a sterile ligature the cord is tied as close to the abdomen as possible, and with sterile scissors cut close to the ligature. Aseptic cotton is applied, and the dressing is not touched for three days. After the third day the dressing is changed every other day until the stump has dropped off. To insure rapid mummification, the child is not bathed until the stump has separated, after which time there is daily bathing and dressing of the navel. The care of the cord is carried out with the customary surgical details as to antisepsis, and is intrusted to the physician instead of the nurse. Two hundred and thirty children treated in this way showed a diminution of navel-infection from 22 per cent. to 3.46 per cent. Epstein condemns moist dressings and antiseptic powders. The navel wound should be treated on ordinary surgical principles, namely, asepsis and avoidance of irritation. The physician has no right to leave this matter entirely to the nurse.

It is true that the conditions of a hundred years are violated by postponing the first bath for several days, but this causes no harm to the child. Doktor found a proportionately greater increase in weight and less skin-irritation in infants whose bathing was deferred.

When the lying-in woman shows signs of sepsis, usually some one is to blame. During and after confinement we observe every antiseptic precaution, and, not content with this, on each visit we take the mother's pulse and temperature, recognizing the fact that forewarned is forearmed.

Even in very few hospitals is the newborn child's temperature taken systematically, and in private practice the infant usually must show distinct signs of illness before the thermometer is used. Yet sepsis is a distinct danger to which the child is exposed, and a rise of temperature may be the very first danger-signal. There will be fewer deaths from "congenital weakness" when the physician allows the baby to share in the attention which he devotes to the mother.

Asepsis should be observed about a newborn child, and this should be impressed upon the nurse. The child has a physiological wound which should be treated by the *physician* on modern surgical principles, and he should bear in mind that the umbilicus may be the pathway of infection without showing signs of local inflammation.

It is safe to affirm that closer observation of the newborn child will result in lessened infant mortality ; for sepsis plays an important rôle in causing this mortality, and yet is one of those conditions over which we have distinct control.

DISCUSSION.

DR. A. JACOBI, of New York: I feel certain the reader of the paper is correct in all his statements. There are quite a number of things to which the practitioner ought to give attention when he has to deal with a new-comer. The author has already spoken of one source of infection, the navel; another is the skin. The skin when maltreated by scrubbing, by bad soap, by hot water, by bursting pemphigus vesicles, is a direct inlet for septic microbes. The mouth is an inlet in different ways: First, the infant will swallow the bacterium coli and others. Second, its mucous membrane of the mouth, especially of the alveolar processes, is poorly developed, and nothing is easier than to break through it. The inconsiderate washing of the mouth of the newborn is a danger, not only because the fingers of the midwife may not be clean, but the very cloth used may give rise to superficial erosion. Such erosions may be very small, the size of the head of a pin, sometimes they are of the area of a square inch. Sometimes there is congenital hypertrophy of the tonsil which may offer an inlet for sepsis. We know that meconium is absolutely germ-free immediately after birth; we also know that it is never germ-free after twelve or twenty-four hours. Where do the germs come from? They are either swallowed and carried down or they enter the anus. It is quite common for germs to enter the anus, and enteritis in the newborn, not infrequently commences in the lower part of the intestine. Thus the anus ought to be looked after. The lungs are likewise inroads for infectious germs. Insufflation of liquor amnii is not infrequent, and if it be not clean it may lead to pneumonia. The string with which the umbilical cord is tied is often full of germs. Scissors may be handed the doctor which do not belong to him, and which are unclean and covered with germs. The towel may be picked up from an unclean resting-place.

DR. CHARLES JEWETT, of Brooklyn: Undoubtedly septic infection may take place from other channels than the umbilicus, but in the vast majority of cases the umbilical wall, I think, is the point of infection; it has been so in all cases seen by me, so far as I can recollect. The author has laid stress on the temperature as an indication of the condition of the umbilical wound. It is certainly an important guide

in the beginning of this and other diseases, but if one attaches too much importance to it he may be misled. I am certain it is common for the temperature to go up one, two, or three degrees during the first days of life, and yet the most careful scrutiny fails to detect anything else out of the way. It has been ascribed to the innutrition of the first few days of life. With regard to treatment of the umbilical stump, undoubtedly it is best to render it as aseptic as possible and let it alone as long as it remains healthy. But in cases of infection it requires the ordinary antiseptic treatment.

XXII. THE DEVELOPMENT OF MUSCULAR ATROPHY ON THE BASIS OF OLD INFANTILE SPINAL PARALYSIS.

BY WILLIAM BROWNING, M.D.,
BROOKLYN.

FOR a number of years evidence has been accumulating that seems to show the occurrence of an ordinary slow poliomyelitis starting where there had been an earlier acute one. That such a sequence should happen appears quite natural, and has been accepted as a satisfactory explanation. A part of the purpose of this paper is, however, to raise the question whether all these cases depend on a relighting of the myelitis or whether a part are not due to more peripheral trouble. Certainly some of these rare cases cannot be due to any progressive loss in the cord. Though others are, the proportion in relation to all cases of infantile poliomyelitis is so small as to but partially invalidate the old teaching that the acute infantile form does not predispose to the late chronic.

The opportunity of following up several such cases for a period of years (five, eight, and fifteen respectively) has enabled the writer to arrive at several conclusions having a practical bearing on treatment and prognosis.

Three of these may be mentioned specially.¹ Two, that had been looked upon as progressive muscular atrophy, were in young males in whom both shoulders were affected, though unequally on the two sides. Of these two it may be specified that there was no his-

¹ The fuller details will be published elsewhere.

tory of like affection in either family, and no muscular hypertrophy in either case.

At a casual examination such a case appears to be a true one of the ordinary progressive type. The location and distribution may correspond to some of the familiar forms. There is the same history of increasing muscular loss. There are always some and usually a lively play of fibrillary twitchings, a sign that most authorities consider crucial.

But a closer scrutiny affords more or less helpful distinctions. My cases were all in young persons, but this does not hold for many of those of previous observers. There is a history of earlier impairment in or about the affected area, an acute attack in childhood, leaving some muscular loss and weakness, a tendency to get cold easily, etc. The condition has for a long time remained stationary; in brief, a history of limited infantile poliomyelitis. Besides this we get an account of the recent superadded trouble. This usually includes a complaint of pain, aching and discomfort at times in the extremity or region involved; and there may be a demonstrable impairment of sensation (*e. g.*, as regards touch, location, pain, and electrical sensations). Such sensory manifestations are not a prominent feature, but are, nevertheless, sufficient to be of significance. Increased local perspiration may or may not be due to the recent complication. Then certain special causes for the recent aggravation are present. The patient has been growing rapidly, or putting the respective muscles to new and greater use, or suffered some twist and strain, or been much exposed to cold and the elements; frequently all of these factors. Muscular overstrain has been the favorite immediate cause heretofore assigned by the various observers. But it is evident that the other matters are also in given cases of importance.

Finally a considerable and relatively lasting improvement follows appropriate treatment—the amount fairly equalling in favorable cases all the recent loss. Barring cases apparently of poliomyelitis, but really due to syphilis or lead, such a result is otherwise very unusual in progressive muscular atrophy. Remissions or stand-stills are not so rare, but here we have a return of ability to follow for years their respective occupations, of course under some limiting directions. Such favorable results are, however, paralleled in some of the cases of myopathy in the young (Erb), but these present cases seem to be clearly distinguishable from that form.

We have then a something grafted on the remains of an old infantile palsy, but with sufficient marks to distinguish it as an independent affair. Its nature is not uniform, yet a fairly satisfactory explanation can be given. We know that after an acute infantile poliomyelitis the parts affected show a poor circulation (more than from simple disuse), a tendency to be cooler than the other side, a more abundant perspiration, impaired growth, and in general a poorer vitality of all the tissues. It is evident that the innervation even of the retained structures is impaired. This being the case, what is more natural than that the remaining nerve-fibres should degenerate on any slight provocation. That the process is often in the nature of a neuritis is indicated by the occurrence of sensory symptoms which in variable degree have preceded and accompanied the recent trouble. It is then a quasi-degenerative neuritis made possible by the previous nerve-enfeeblement, but due to one or more of the causes already mentioned. The neuritic symptoms in these cases we should hardly expect to be as marked as in healthy nerves, and they do not seem to have received much notice heretofore. Evidently attention has been occupied wholly by the obvious connection with the old cord trouble.

In certain of the cases a purely muscular affection is possible, starting from overstrain of weakened muscles. Very likely we have here an explanation of many of the cases of progressive muscular atrophy that from time to time are reported as cured. There may, however, be cases in which a real progressive poliomyelitis develops in the subject of an old infantile attack, as has apparently been shown by autopsy. Perhaps these are preferably the cases in which the later trouble starts up in some other part than the first (the more usual occurrence, according to Bernheim, *Rev. de Méd.*, 1893, No. 1). But it is certain that this is not as common as might at a superficial glance be assumed.

The necessary treatment is evident and all the more important because so simple. Improve and increase the local circulation. Keep the part warm, and limit anything more than moderate use. Massage, and especially electricity, are most valuable, the faradic current often sufficing.

The neuritis and degeneration from chilling can and should be ward off by attention to the following simple points:

1. Daily friction of the weakened part.

2. Warm clothing. It should always be thicker or better and more complete than over other parts.

3. Care to avoid any prolonged exposure.

4. Proper watching when at all exposed to see that the part does not grow overcold, resp. that a prompt reaction be induced.

5. When there are indications of fresh injury, a faradic treatment two or three times a week for a considerable period. Occasionally it is well to supplement this with galvanism.

By attention to these matters I have been able to tide a patient, living an active life, through a cold winter and without the suffering and retrogression that had previously been the rule, and in case of harm already produced to regain the ground lost. Continued use of the part is permissible, if only strain, overtire, or excess be carefully avoided.

One point may be worth mentioning. In my experience a lower extremity affected by infantile poliomyelitis is less amenable to our efforts than when the trouble is about the shoulder or arm. The reason may be the difficulty in properly restricting the use of the leg. The little patient cannot forego walking and standing, and so the weaker member is continually overtaxed.

Several conclusions are warranted :

1. That infantile spinal paralysis is sometimes followed at a later period by further atrophy.

2. The assumption that this is due to extension of the cord trouble cannot be accepted for more than a fraction of such cases.

3. As a rule, at least in the young, some more peripheral cause is present, as an active or degenerative neuritis. Simple disuse, poor innervation, local muscle-strain, unequal development, and especially cold, are important causative factors.

4. In such cases there is good prospect of relative recovery if the patient be still a young person.

5. Active rational treatment is necessary.

XXIII. NITROGLYCERIN IN THE TREATMENT OF SCIATICA.

BY WILLIAM C. KRAUSS, M.D.,

BUFFALO.

SCIATICA has been and always will be one of the most intractable of all nerve-pains with which physicians have to wrestle, and its alleviation and cure are accomplished, in the majority of cases, only after a prolonged course of mixed and conglomerate treatment. No affection of the nervous system enjoys such a wide range of acquaintanceship among drugs and measures, but none seems to have become on terms of intimacy or favoritism with this fickle disease.

Rest, ice, heat, blisters, hypodermic injections, packs, extension, fixation, electricity, acupuncture, massage, baths, bandaging, stretching, to say nothing of the innumerable medicinal agents, are all equally efficient and inefficient, and, whether the pain be due to a neuralgia or neuritis, all stand even chances of success. The advent of any new drug not already on the list, if such is possible, creates more suspicion than confidence, and only after it has proved itself worthy can it be recommended to the profession at large.

Such was the state of affairs when nitroglycerin first came to my notice, and now, after an experience of several months, in which time I have treated seven cases, I desire to place myself upon record. The only reference¹ that I have been able to find to the drug is in the 1894 number of the *International Medical Annual*, where Charles Lawrence is quoted as recommending its use in cases of obstinate sciatica, beginning with 1 minim of the 1 per cent. alco-

¹ Since writing the above the following report has come to my notice, taken from the *Journal of Materia Medica*, February, 1896: "Mikhalkine reports three cases of obstinate sciatica which were greatly benefited by nitroglycerin given in the form of the official solution in one-drop doses three times a day. In one case, a patient, aged forty-four years, in whom salicylates, acetanilid, phenacetin, quinine, antipyrine, bromides, chloral, massage, sedative ointments, and blisters failed to give relief, the following combination was entirely successful: Nitroglycerin (1 per cent. solution), three to thirty minims; tincture of capsicum, ninety minims; peppermint water, three drachms. Three drops three times a day for three days, and then ten drops three times a day. In another patient, a nervous woman, aged forty-five years, with atheromatous arteries and sciatica, associated with atrophy of the muscles and hyperæsthesia, the same combination, in conjunction with bromides, also afforded speedy relief. The third case was a man, aged forty years, who suffered with fever and severe pain in the right leg. A blister over the trochanter, with sodium salicylate and valerian, lowered the temperature, but failed to relieve the pain. After the lapse of four days the nitroglycerin treatment was substituted, and this promptly lessened the pain and effected a cure within six weeks, the trouble not having returned after six months."—*University Medical Magazine*.

holic solution and increasing up to 5 minims, three times daily. Not being able to find his article in its original form, stating the class of cases in which it was indicated, I used it indiscriminately on all patients with sciatic pain with the following results :

CASE I.—Mr. B., aged fifty-five years, has been a sufferer with rheumatism and sciatica several times, the knee and ankle-joints being particularly affected. On Thanksgiving day, 1895, was seized with sciatic pain and tenderness, and was obliged to remain in bed without being able to move the left leg, ever so slightly. Extreme tenderness and sensitiveness were present over the sacrum, in the space between the trochanter and tuberosity of the ischium, popliteal space, inner surface of the malleolus, and extending to the big toe. Atrophy of the muscles, along with disturbances of sensation, indicated a neuritis of the sciatic nerve rather than a neuralgia.

He was treated heroically with ice applications, rest, liniments, along with the salicylates, iodides, and alkalies, without any relief ; nerve-stretching was suggested, but not carried out. I was called to see the patient on December 8, 1895, and prescribed nitroglycerin, one minim of the 1 per cent. solution or $\frac{1}{100}$ of a grain tablets three times daily, along with tonics and galvanism. In two days' time the effect of the nitroglycerin was manifested in the arteries, and from this time on he improved so that in ten days the sensitiveness over the nerve-trunk had disappeared entirely. An attack of rheumatism set in a few days later, attacking the knee and ankle-joints of the left leg and the knee-joint of the right leg, with swelling, redness, and tenderness over these joints. The sciatic nerve became at no subsequent period tender or painful, and to-day he is at his business relieved of both affections.

CASE II.—Mr. B., aged forty-eight years, book-keeper, has been a sufferer from rheumatism and sciatica for years, so that he is hardly able to walk even with his cane. An acute attack of sciatica set in on November 18, 1895, affecting the right leg, necessitating complete rest with immobility of the leg. Tenderness, pain, and sensitiveness were present, and the least movement of the leg was attended with excruciating pain. I prescribed nitroglycerin, 1 per cent. solution, three times daily. Thinking he could not get too much of a good thing he increased the dose to four and five minims three times daily. No other medicine was administered. In eight days' time he was walking about entirely freed from all sciatic pain, and, in his own words, cured from the "hardest attack in the shortest time."

CASE III.—Mrs. B., wife of patient No. 2, was seized on December 10, 1895, with an acute attack of sciatica on the left side. I was immediately called for and found present all the symptoms of severe sciatic neuralgia. Nitroglycerin in one-minim doses three times daily relieved her so that in seven days she was able to be about the house, and in fourteen days all pain and sensitiveness along the nerve had disappeared.

CASE IV.—Young lady, aged eighteen years, employed as a typewriter and stenographer, and obliged to sit eight to ten hours on a hard-bottomed

chair, complained of acute pain beginning in the small of her back and hips and extending down the legs. On examination I found her anæmic, emaciated, with sensitive areas over the nerve-trunks of the legs, some disturbances of sensation, and trophic disorders, symptoms indicating a neuritic affection. I prescribed cod-liver oil and nitroglycerin, with rest, and after a period of four weeks she is again at her work, free from her sciatic pains.

The following three hospital cases are reported by my interne, Dr. Robinson, and are copied from the records of the hospital. These cases include *all* the sciaticas which have entered since the nitroglycerin treatment was instituted, and are *not* picked cases favorable to this form of treatment.

CASE V.—John W., aged fifty-six years; nativity England; occupation groom; admitted November 30, 1895. Family history negative; personal history negative. Present history: Patient enters hospital complaining of pain in both hips and lower extremities. Examination shows tenderness along course of both sciatic nerves, most severe on left side. Patient was put on bitter tonic: Aconite and glonoin, m_j t. i. d.; dose was increased to m_{ij} . He has shown marked improvement. On entrance to the hospital was unable to walk, but at present time he can walk without much pain. There is still some pain on pressure of left sciatic at its exit from pelvis.

CASE VI.—John K., aged sixty-six years; nativity Ireland; occupation laborer. Family history: Mother rheumatic, otherwise negative. Personal: Patient had right sciatica at age of thirty; was discharged from hospital as cured after six weeks' treatment; had another attack of same leg at age of fifty-four, which yielded to treatment after six months' time. Present: At age of fifty-nine the right sciatic again became involved, and three years later the left side became affected. Since that time patient has never been free from pain. He entered the hospital October 22, 1894, with intense pain in both legs, and from which relief could only be obtained by morphine given hypodermatically over the sciatics. Bromide and chloral were also given with no effect in permanently relieving the condition. On December 1, 1895, patient was given the bitter tonic and glonoin, dose being increased from m_j to m_{iv} . When treatment was begun pressure over the line of the sciatic nerves gave patient great pain. At present there is some tenderness, but patient is comfortable and has hopes of recovery, which he had given up before present treatment was commenced.

CASE VII.—Charles N., aged forty-three years; nativity United States; occupation stonecutter. Family history: Father died from consumption; mother died from Bright's disease; was rheumatic. Two brothers alive, who are also rheumatic. Personal history: About nine years ago developed pain in groins and back, which has persisted with more or less severity ever since, and which at times prevented him from following his occupation. Patient very susceptible to cold.

Present illness: Two weeks before entrance to hospital patient, after

exposure during a storm, developed severe pain in left hip and in left lower extremity, being more marked at the joints. Examination shows lung and heart normal, except slight accentuation over the aortic valves. Temperature 100° F.; bowels open; appetite fair; urine showed albumin on first examination, but which, after a week in bed, disappeared. No casts were found at any time.

Pressure over sciatic notch on left side and along left sciatic nerve gave extreme pain to patient, which was relieved only by morphine.

Treatment: Patient was given spirits glonoin $\text{m}j$ t. i. d. with a bitter tonic of strychnine and cinchona before meals, bowels being kept open (one week). Later the glonoin was increased to $\text{m}iv$, and as patient complained of headache reduced to $\text{m}ij$. On this dose he has been kept for the past three weeks. The tenderness over the arm has, at present time, nearly disappeared. The improvement began to be noticed immediately after the increase of the drug, which improvement has steadily advanced since that time.

Of these seven cases all received marked benefit from the very beginning of the mode of treatment, the acute cases recovering in from ten days to one month, the chronic cases notably improved and gaining daily.

Just how to explain the action of this drug on sciatic disturbances is extremely difficult. Whether it has the effect of dilating the arteries of the nerve-sheaths, affording more nourishment to the nerve, might answer in cases of neuralgic sciaticas, but would hardly be accepted for neuritic sciaticas. The action in these latter cases can be explained in no satisfactory way, and, therefore, had better be left unexplained.

The only discomforts arising from the use of this drug were congestive headaches and flushing of the face sometimes following the first dose of the medicine, while in others it did not supervene until the maximum doses were administered. To counteract these effects the bromides may be used, thus robbing the nitroglycerin of all the physiological effects where they were *not* wanted and allowing them to proceed without hindrance in the places where they were desired.

I do not wish to convey the idea that nitroglycerin will cure every case of sciatica, far from it; but if it cures 50 per cent. of all cases in a period of from one to three weeks, it will be doing what no other drug or measure has heretofore done. If after a period of administration for ten days no perceptible effects have been obtained, it should be abandoned and kept in store for the next case. The treatment of anæmic conditions, diatheses, and local causes, as pres-

sure—these perhaps provoking and setting up the sciatic pain—must, of course, be considered and carried out in conjunction with the special treatment.

From my experience I would advise you to *begin* treating sciatica with nitroglycerin, and only after its inability to cure to fall back upon the other drugs and measures with which we are acquainted.

XXIV. ABSCESS OF FRONTAL SINUS—CASE.

By P. J. CREVELING, M.D.,

AUBURN.

IN reporting the following case I do not propose to consider or discuss the disease in general, but merely to call attention to the psychic disturbance present—a condition I have not before seen mentioned in such cases, one that undoubtedly seldom occurs, but one it is possible has been overlooked in some instances. It is not uncommon, if not the rule, in any acute disease of the frontal sinus, especially when there is much swelling or filling of the cavity sufficiently to exert pressure on the surrounding parts, to have more or less pain and soreness referable to the face, eye, and head, with some mental disturbance, such as peevishness, moroseness, and irritability, but a complete unbalancing of the mental equilibrium, and that, too, without any distinctive indication of the disease being present, is a result hardly to be expected.

A. B., aged thirty-five years, was brought to my office in November, 1894, with the statement that he had for a week or more been acting strangely and that he was believed to be insane; that it required a great deal of coaxing and some force to induce him to come, as he feared arrest if seen on the street.

During my conversation with him I discovered he had a number of well-fixed delusions, such as fear of arrest, a desire to absent himself from friends, a disposition to hide from view, if opposed in any of his wishes to become irritable and demonstrative, and with a particular desire for his shotgun, which he persisted in placing under his pillow at night. His face was flushed, tongue furred, pupils dilated, and skin moist. He was restless, irritable, and apprehensive while in the office.

During the interview he said he had nasal catarrh, that the mucous membrane felt dry, and that the left side of the nose seemed full and was very uncomfortable. He also complained of a bad feeling above the left eye, with a sensation as if that part of the skull was being lifted from his head, but there was no actual pain. He then said if you will only do

something for my catarrh I know I will be all right; that makes me feel very badly. I therefore made an examination of the nasal cavities and found the mucous membrane in a state of chronic inflammation, the left cavity being almost entirely closed by swelling, but there was nothing seen that would suggest that mental disturbance was due to the nasal disease. In order to explore the cavity throughout it was vaporized with an antiseptic and cocaine solution of sufficient strength to contract the tissues. A probe was then passed into the infundibulum of the frontal sinus, and a free discharge of pus and mucous followed. This gave immediate relief, not only of the physical discomfort, but of the psychic disturbance as well, and in a few days he seemed to have completely recovered. Nearly three weeks later he returned with the statement that the discharge from the sinus had ceased, and he was again feeling badly. His friends stated they had noticed a return of the former symptoms for some two or three days, but that they were much less pronounced. The tube was again opened with the same result as before, except there was little or no pus in the discharge. He soon left the city and consequently passed from observation.

As already stated, the psychic condition is the only feature of special interest in the case, but here was a man brought to me for consultation with reference to having him committed to an insane asylum. He had delusions; the delusions were insane and of a character to render him extremely dangerous; his condition was sufficient for commitment. The friends could give no cause for the trouble, and I am free to say, had it not been for the statement of the patient himself, it is possible the real source of the disease would have been overlooked, as there were no external manifestations that would invite an inspection of the nasal cavities or sinus. There was not actual pain, merely a full, uncomfortable feeling over the left superciliary ridge; the principal complaint was the dryness of the nasal cavities, and there was no distortion of the parts from pressure within the sinus. Now, the closure of the infundibulum was undoubtedly due to the swelling of the nasal mucous membrane and the retained secretions became hardened in that tube, otherwise the passage of a probe in the canal would not have given such complete relief. The passing of a probe into the frontal sinus is not always the most easy thing to accomplish, and as far as my experience goes usually gives but little or no result.

It should be stated that this man had had two attacks of epidemic influenza, a disease, as is well known, that leaves the nervous system in many instances much below par, and unduly susceptible to any disturbing influence, and also the upper respiratory tract extremely

prone to disease. Since seeing this case, it has occurred to me that in many cases reported wherein that disease terminated in insanity, the mental disturbance in some instances might have been due to a local condition in some of the cavities communicating with the nasal passages, or even to disease of the walls of those passages themselves.

XXV. THE EQUILIBRIUM FUNCTION OF THE EAR.

By GAYLORD P. CLARK, M.D.,

SYRACUSE.

THE equilibrium function of the ear is described by the standard text-books of physiology and otology in brief as follows: Foster¹ states that *section* of the semicircular canals of the membranous labyrinth of a pigeon's ear is followed by movements of the head in the direction of the canal cut when the bird is disturbed, and in a lack of co-ordination of body movements when it attempts to fly; that "in general its behavior very much resembles that of a person who is exceedingly dizzy." Similar phenomena have been observed in the mammals and in frogs and fishes. In addition to the effects of section of the canals, Foster states that characteristic movements of the head or eyes may be excited by laying bare a canal and gently blowing over its endolymph with a fine glass canula, by passing a fine hair into the ampulla, by suddenly heating or cooling a canal, and by passing an electric current through the ampulla. He concludes that "the evidence seems to show beyond doubt that the cristæ of the ampullæ are organs through which are generated, according to the position of the head, afferent impulses which form the basis of the sense of equilibrium and enter into the co-ordination of movements affecting that equilibrium." Politzer² refers to the differing views of those who consider the semicircular canals to be an organ of the sense of equilibrium, and of those who infer that all disturbances after injury of the canals proceed from a simultaneous lesion of the cerebellum. There is a large amount of clinical evidence establishing the association of vertigo with

¹ Text-book of Physiology, revised and abridged, 1895, p. 729.

² Diseases of the Ear, 1894, pp. 605-634.

various forms of disease of the ear. In some of these there are structural changes affecting the labyrinth directly, as exudations into its interior, or indirectly by abnormal pressure on the lymph which surrounds it as a result of abnormal conditions within the middle and the external ear. The cause of this aural vertigo is a subject of controversy. There are those who ascribe it to a pathological irritation of the ampullar and vestibular nerves. There are others who consider it an effect of the transmission of pressure from the fluid of the labyrinth through the small aqueducts to the fluid of the subarachnoid space and so to the base of the brain. A mechanical objection is urged to the latter theory, in the small size of the aqueducts, which would interfere with a quick flow of fluid upon a sudden increase in tension within the labyrinth.

My object in discussing the equilibrium function of the ear is to bring to your notice the results of some of the more recent physiological investigations of the subject. A brief statement of the general structure of the organ seems advisable. The finer structure of the vertebrate ear and of the so-called "ear," and similar structures, of the invertebrates, consists of a special epithelium in connection with which the terminals of nerve-fibres ramify. The cavity which contains these histological structures may be simple or very complex; there may be great variety in the arrangement of the special epithelium, and there may be otolithic structures in relation to the special epithelium. A simple depression or sac with peculiar epithelium, upon which an otolith rests, or a somewhat complicated sac with peculiar epithelium but without an otolith, are the usual forms of the so-called invertebrate "ear." The ear of the lowest vertebrates—the fishes—consists of a sac with areas of special epithelium, and it contains otoliths. Connected with this sac, which may be compared with the more primitive invertebrate structure, is the additional development of the semicircular canals which constitute a very large part of the whole labyrinth. The cochlea is a still later additional development in the mammalian ear.

The three semicircular canals in each ear are placed with their planes at right angles to each other, one canal being horizontal, the other two vertical, the two vertical canals on each side being so placed with reference to each other and to those of the opposite side that the four vertical canals would, if moved laterally to the

mesial plane of the head, form an X-shaped cross, the angles of the cross being approximately right angles and open toward the front, the back, and each side. (See Fig. 1.) The plane of an anterior vertical canal of one side would thus be *the same* as that of the posterior vertical canal of the opposite side. As the internal ears are normally located, the plane of a posterior vertical canal is *parallel* to that of the opposite anterior vertical canal. Special epithelium and nerve-endings are found in the ampulla or enlargement at one end of each canal. The portion of the auditory nerve which supplies fibres to the special epithelium of the sac and ampullæ separates from that which supplies the cochlea, and centrally differs again from the cochlear portion in its connections with the medulla and cerebellum.

The problem of the function of the semicircular canals has attracted many workers during the last twenty-five years. Goltz, Mach, Breuer, Crum-Brown, and others have done important work, the results of which lead them to consider the canals as an equilibrium organ. Very much of all the operative work that has been done, and there has been much of it on birds and fishes, has been by cutting, removing, and otherwise injuring the canals. Loeb's work on the dogfish was of a more satisfactory kind in that he cut the acoustic nerve without other injury of the labyrinth. A series of experiments, the *main* results of which I desire now to present, has recently been made by Lee, of Columbia, upon the semicircular canals of the dogfish.¹ Lee's experiments are of special value on account of the methods employed, which were of such a nature as to avoid injury to the labyrinth and were so varied that results obtained in different ways served to confirm one another. The general mode of procedure was *first* to carefully observe all motor effects accompanying a passive change of body position by rotation of the uninjured fish. Certain compensating movements of eyes and fins occur, and may be taken as indices of the state of equilibrium of the fish at the time of observation. The *next step* was to note the effects of stimulation by pressure upon the external surface of exposed but uninjured ampullæ, and, *finally*, the effects produced by section of the ampullar nerves just before their entrance into the membranous labyrinth. The cartilaginous skull of this fish permits a comparatively easy,

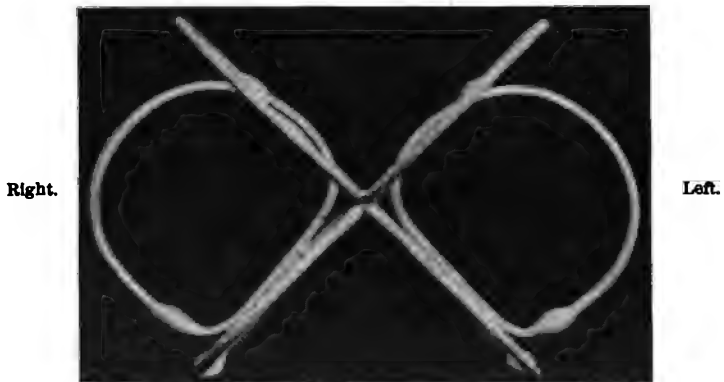
¹ Journal of Physiology, 1893, vol. xv.; 1894, vol. xvii.

exact, and bloodless operation. During the operation the fish lay quietly on a board under a net, its respiratory function being maintained by conducting sea-water through a tube into its mouth, whence it ran out through the gill-slits.

I will state and compare briefly the effects of rolling the uninjured dogfish round its longitudinal axis forty-five degrees to its left ; then of stimulating at the same time the ampullæ of the two vertical canals of the left ear ; and, finally, of section of the nerves supplying these two ampullæ. Rolling the uninjured dogfish over toward its left, either in the water or in the air, causes each eyeball to roll in its orbit in the *opposite* direction, the tendency thus being to retain the visual impressions of the resting position. At the same time certain of its fins move in the *same* direction as the turning, their movement being that which tends to resist the turning, and were the fish free they would either keep the body in or return it to the resting position. (See Fig. 2.) Stimulation by simultaneous pressure upon the ampullæ of the two vertical canals on the left side causes the eyes and fins to assume the *same* positions as when the fish is rolled over toward its left side. Section of the nerves supplying the ampullæ of the two vertical canals on the left side is followed by inability to call out the movements produced by stimulation before section, and the eyes and fins pass into the positions which they assume when the corresponding ampullæ of the *opposite* side are stimulated ; in other words, the eyes and fins move as if the corresponding nerves *on the other side* had been stimulated. The effect of the fin movement is such as to cause the fish, when left to itself in the water, to roll over on to its *left* side, that is, toward the injury, and at times to make *continuous* rolling movements round the longitudinal axis toward its left. Since section on one side is followed by movements similar to those caused by stimulation of the other side, it has been suggested that there is a loss of normal impulses from the cut side, leaving the normal impulses from the sound side unbalanced, that consequently there is the impression of being turned toward the sound side, the appropriate compensating movements of eyes and fins follow, the effect of the fin movements being to turn the animal not from a supposed inclination to the right into the resting position, but from the resting position into an actual inclination to the left, which position is no longer perceived owing to the section of the nerves on that side. This hypothesis is further strength-

FIG. 1.

Posterior.

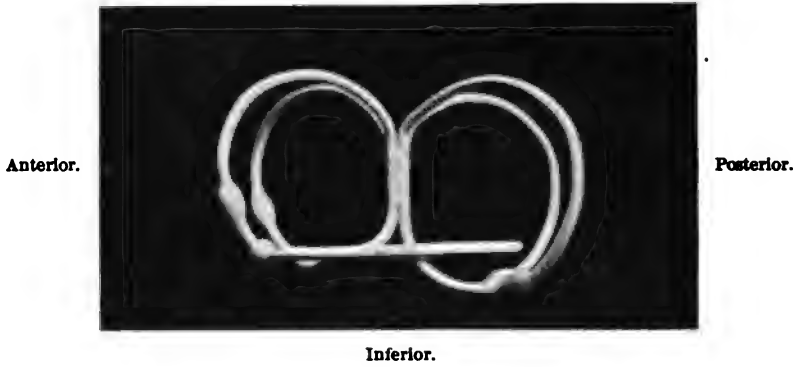


Anterior.

Model, viewed from above, of the semi-circular canals of the two ears of a dogfish brought together at the mesial plane.

FIG. 2.

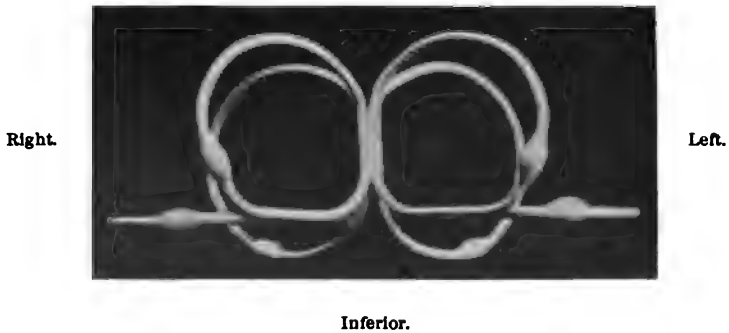
Superior.



Model, viewed from the left side.

FIG. 3.

Superior.



Model, viewed from in front.

ened by the effect of additional section of the corresponding nerves on the other side, after which the eyes and fins remain in the normal position, but no longer compensate upon rotation round the longitudinal axis. We have thus threefold evidence : by turning—that is, physiological stimulation ; by artificial stimulation ; and by nerve-section (the effects of the last being opposite to those of the first two), that the *two* vertical canals of the left side are affected by rotation in the body-plane which lies between them, and in such a manner that afferent impulses arise which affect the central co-ordinating mechanisms concerned in the movements of the eyes and fins. The results of actual experiment show that the two vertical canals of the right side function in a similar manner when the rotation round the longitudinal axis is toward the right.

It has further been found that rotation of the dogfish round its transverse axis head downward causes compensating movements of eyes and fins suited to retain or regain the resting position ; that simultaneous stimulation of the ampullæ of the anterior vertical canals of *both* sides calls out the same eye and fin movements as rotation head downward ; and that section of the ampullar nerves of these *two* canals is followed by the eyes and fins assuming positions the very opposite to those called out by stimulation, the effect of the fin movement being such as to cause the fish when set free in the water to dive head *downward* to the bottom—that is, toward the injury. (See Fig. 3.) The planes of the two anterior vertical canals bear essentially the same relation to each other and to the mesial plane of the body as do those of the two lateral vertical canals to each other and to the transverse plane of the body. They form the forward angle of the square X. There is triple evidence—by turning the uninjured fish ; by artificial stimulation of the ampullæ, and by section of the ampullar nerves—that they function in rotation in the body-plane which lies between them. The two posterior vertical canals bear essentially the same relation to the two anterior that the two lateral of one side do to those of the opposite side, and threefold experimental evidence—by turning, by stimulation, by section—is at hand that they function in backward rotation. When the nerves of their ampullæ are cut and the fish is returned to the water it shoots head *upward*, that is, toward the injury, assumes a vertical position, and at times is even inclined somewhat backward.

The conclusions from the observations thus far mentioned are further confirmed by the results of rotation of the uninjured dogfish in planes between those considered, namely, in planes corresponding to those of the vertical canals, then of stimulation of the ampulla of one of the canals lying in the plane in which the fish has been turned, and then of section of the nerve supplying that ampulla. Compensating eye and fin movements, partaking of the characteristics of movements in planes on each side of that vertical canal, are called out by both physiological and artificial stimulation. It has further been found that the effects of rotation round the vertical axis—that is, in the horizontal plane (the plane of the horizontal canals)—stimulation of an ampulla of a horizontal canal, and section of its nerve justify the conclusion that the horizontal canals function in rotations in the horizontal plane, or involving the horizontal plane, as the vertical canals function in rotation in vertical planes.

It seems as if nothing were lacking that could be considered essential to establish the fact that, in the dogfish at least, the semicircular canals of the *two ears taken together* constitute a compound sense-organ which is stimulated by head and body movements of rotation, and which functions by its component parts taken separately, in pairs, or in threes, as the case may be, in every possible plane in which turning may occur. It seems perfectly evident that this sense-organ is called into action by stimulation, and is thrown out of function by section of its nerves, and, further, that the brain is involved in the action only as a reflex centre to which the ampullar impressions go, and from which the co-ordinated motor impulses proceed to the muscular mechanisms of eyes and fins.

If the similarly constructed and grouped semicircular canals of the human ear constitute a similar sense-organ, experimental and clinical evidence should be forthcoming to indicate it. Ferrier, in his recent address before the Physiological Section of the British Medical Association upon "The Relation of Physiology and Medicine,"¹ says: "The ultimate test of the applicability of a physiological generalization, or principle, to man must be its harmony with the facts of human physiology and clinical medicine;" and in the address he emphasizes the similarity of the aims and

¹ British Med. Journ., Nov. 23, 1895, No. 1821.

methods of the physiologists and clinicians and the mutual service of their work in the advancement of both physiology and medicine. It would be profitable to study cases of aural vertigo in the light of such definite physiological knowledge of the relation of the semicircular canals to equilibrium phenomena as we now possess. In making clinical observations certain conditions which may enter in to modify or complicate this function should be taken into consideration. The effects of injury or disease involving the labyrinth may be much less accurately localized than those of the operative procedures which furnish the physiological facts of which I have spoken. The problem before the clinician may be even more complex than that before the experimentalist. The *sensations of dizziness* should not be confused with the *reflex movements* that may indicate disturbance of co-ordination. The *subjective sensation* is the factor that is clinically emphasized; the *objective reflex compensating movements* are the factors that are emphasized in the experimentation upon the lower animals. We know nothing of the *sensations* of which the dogfish may be conscious when the canals are physiologically or artificially stimulated, or when they are thrown out of function; we do know very definitely the *compensating movements* associated with those conditions. If sensation be present there is reason in believing it to be a sensation of movement in the direction *opposed* to that of the compensating movement. When the human ear is concerned there are sensations to be described and there may be reflex movements to be observed, and the careful analysis of these sensations and movements and their relation to each other may throw much light upon the question whether the function of the human canals corresponds to that described for the dogfish. It should be remembered that fish and birds live all or much of the time suspended in a liquid or gaseous medium, in which all those impressions are lacking which arise when an animal is in contact with a surface and which are known to contribute in large measure to the co-ordinate movements upon which the equilibrium of the body depends.

In looking over a certain amount of clinical literature for data in harmony with the physiological facts described I have found a large amount of material, to some of which I will refer. There is abundant evidence that vertigo may be produced by *artificial stimulation* of the inner portion of the ear. Violent attacks of vertigo with nystagmus have been observed to follow such pro-

cedures as moderately strong injections into the external auditory meatus, particularly in cases of perforation of the membrana tympani ; inflation of air into the middle ear ; and contact of a probe with the free stapes.¹ It seems to be the opinion of otologists that the vertigo appearing in various forms of disease of the ear is due to *irritation* of the nerve-terminals in the ampullæ of the semicircular canals. There are interesting reports upon the movements as well as the sensations accompanying aural irritation. Ewald² found galvanization of the inner ear in mammals and man caused the head to incline away from the cathode. After removal of both ears there was no inclination of the head to either side ; after removal of one ear application of the cathode to the injured side caused no inclination, but its application to the sound side caused the head to incline toward the injured side. Galvanic vertigo, then, depends on irritation of the inner ear ; the stimulating pole is the cathode ; the turning of the head is not toward, but away from the side stimulated. Reasoning from the behavior of the dogfish, stimulation of the ampullæ of the vertical canals of one side should produce the sensation of inclination toward that side, and a compensating movement toward the opposite side. Two papers by Dr. A. Guye, of Amsterdam, are of special interest in this connection. In one on "Ménière's Disease," read before the Otological Section of the International Medical Congress at Amsterdam, September 9, 1879,³ he maintains that the vertigo produced by the processes of disease, and that due to therapeutic applications, is preceded or accompanied by a *sensation of rotation* that is constantly *toward the affected side*. He cites a striking case in which the use of Politzer's method in inflammation of the left middle and inner ear, with vertigo as a feature, caused a sensation of rotation toward the *left*, while the head was involuntarily turned sharply to the *right*, away from the seat of irritation. After discussing the physiology of the canals, he comes to the conclusion that "we can therefore regard it as a fact that the sensation of rotation in the left horizontal semicircular canal is a sensation of rotation to the left, and in the right horizontal semicircular canal to the right." In another paper, on "A Hitherto Undescribed Form of Rotary Sensation in Labyrinthine Disease,"⁴ read before the Otological Section at the recent meet-

¹ Politzer : *Diseases of the Ear*, p. 634.

² *Arch. of Otol.*, vol. ix. p. 230.

³ *Arch. of Otol.*, vol. xx. p. 349.

⁴ *British Med. Journ.*, Nov. 23, 1895, No. 1821.

ing of the British Medical Association, Dr. Guye describes a case of Ménière's disease in the left ear, with rotary sensation in the direction of the diseased ear, in which the attack of giddiness came on with the sensation of objects turning round in the direction of the hands of a clock, followed later by the sudden sensation of everything turning away to the right. There was therefore a sensation of rotation in the transverse vertical plane followed by a sensation of rotation in the horizontal plane. In some cases sensations of rotations forward and backward in antero-posterior vertical planes are described. In turning to the vertical canals for an explanation of the sensation of rotation in vertical planes, Dr. Guye remarks that the anterior and posterior vertical canals could afford rotary sensations round two axes which are about perpendicular to each other and to the vertical, and he looks upon the anterior vertical canal of one side and the posterior vertical canal of the other side, which are situated in parallel planes, as co-ordinate structures, sensations originating in one of which would be those of falling forward or backward round an axis at right angles to the plane of the canal. Dr. Guye's observations and conclusions are in perfect accord with the results of Lee's work on the dogfish, but they stop short of that conception of the *combined* action of the canals in rotation in planes intermediate between any two, which is one of the striking results of that work.

The disappearance of vertigo, or its absence, when there are extensive structural changes in and even destruction of the canals, cannot be considered an argument against their functioning as an equilibrium sense-organ. There is no abnormal position of the eyes and fins of the dogfish when all six canals are thrown out of function, but the compensating movements on rotation no longer occur. It has been observed that the disturbance of equilibrium in animals, after operation upon the inner ear, becomes less marked when a slight support is furnished, or when, as in flying or swimming animals, they come to rest in contact with some surface. Man, under all ordinary conditions, receives impressions which arise from surface contact, and these, together with those of sight, may quite obscure the effects of loss of the aural equilibrium sense-organ. These effects may, under special circumstances, become apparent. There is evidence of this. Kreidl¹ found that in about 50 per

¹ Politzer : Diseases of the Ear, p. 705, referring to Pfüger's Archiv, II. p. 119.

cent. of 109 cases of deaf-mutism the oscillating movement of the eyes, which is always produced in a normal person by turning round a vertical axis, was absent. Of 62 deaf-mutes, turned round in a "carrousel," only 13 were able to locate the vertical, while all but 1 in 71 normal persons could do it. Breuer, in his article "On the Function of the Otolith Apparatus,"¹ refers to the observations of James,² who found that 186 of 519 deaf-mutes could not be made dizzy by rotation, while only 1 of 200 healthy persons escaped the effect. Many of these deaf-mutes who were not made dizzy by rotation stated that when diving under water they were seized with an indescribable bewilderment and fright, which only vanished when the head came out of water.

Something remains to be said of the function of the otolithic structures of the ear. The text-books refer briefly to the hypothesis that they function in damping the vibrations of the hairs which are concerned in the transmission of sound-waves, and to the view that they give rise to impressions of straight-line motion by their change of position through inertia when the movement starts or stops. Loeb and Lee have experimented with the otolithic structures of the dogfish ear. The effects of natural and artificial stimulation of these structures are not easy of differentiation from those due to activity of the canals above described. It has not been found possible to cut the nerves supplying these parts of the ear without great injury to the membranous labyrinth. The method of experimentation has been to open the vestibule and remove the otoliths. When this is done disturbance of equilibrium is produced, the characteristics of which partly resemble and again differ from those of the disturbance due to abnormal condition of the semicircular canals. In order to study the function of otolithic structures apart from association with the semicircular canals, observers have turned their attention to the simpler otolithic structures to be found among the invertebrates. Engelmann, Verworn, and others have experimented with ctenophors. In these jellyfish-like animals a spherical otolith rests on four equal elastic ciliated plates at the aboral pole of the animal. Nerves connect the ciliated plates with the motor mechanism upon which the

¹ Pflüger's Archiv, xlviii. p. 195.

² Sense of Dizziness in Deaf-mutes, W. James, Harvard University. Amer. Journ. Otology, Oct., 1887.

position and locomotion of the animal in part depend. Removal of the otolith is followed by marked inability of the animal to maintain its customary position in the water. Delage, Bunting, Kreidl, and others have turned their attention to the otolithic structures situated in the base of the inner antenna of the lobster, crayfish, and allied forms, and they have obtained evidence of disturbance of body equilibrium when these structures are removed. Kreidl has made some very ingenious and valuable experiments upon *Palæmon*, a form allied to the shrimp. It is known that this animal, like the lobster and certain other crustacea, loses its otoliths with the old "ear" sac when it moults, and that after moulting it supplies new otoliths by picking up with its claws small particles of sand or other matter and conveying them to the opening of the new cyst. The animals in question, immediately after moulting, were placed in filtered sea-water to which fine particles of metallic iron were added. Later it was found that the new cysts contained "iron otoliths." Then the animals were subjected to the influence of an electro-magnet, and it was found that they made certain movements which were not due to simple attraction toward the magnet, but such as were produced by a physiological reflex called out by a change of position of the "iron otolith" upon its supporting hair-cells. In other words, by moving the otoliths through magnetic attraction, without change of the position of the body of the animal, into a position corresponding to that produced by a change of body position, similar impulses arose and called out similar muscular contractions.

The relation of the otolith to equilibrium phenomena is experimentally quite evident, and its method of action so mechanical that there are those who assert that it is essential to the formation of an equilibrium organ. The crabs, which are more highly specialized crustacea than the lobster and the forms just mentioned, possess a complex otocyst, but no otoliths. Much less work has been done upon these forms than upon those possessing otoliths. During the last two summers, in the Marine Biological Laboratory at Wood's Holl, Mass., I have carried on an investigation as to the relation of the otocysts to equilibrium phenomena in two forms of crabs, one a land crab, the so-called "fiddler," a lively runner, and the other a water crab, the "lady," an equally lively swim-

mer. The eyes of the crustacea are borne upon the ends of stalks which have an angular movement. So far as I have observed different forms of crustacea, these eyestalks make compensating movements when the body of the animal is inclined. As no study of these movements as indices of the state of equilibrium in these animals has been made, my attention has been first directed to this point—that is, to the effect of normal physiological stimulation. Artificial stimulation of the cysts has not been found practicable, on account of their very small size and the hard chitin shell that encloses them. The effects of loss of function of the cysts have been obtained by removal of the antennæ containing the cysts. When the cysts are thus removed there is marked evidence of disturbance of body equilibrium, and it is of the same general nature as that observed by others in ctenophors, in other forms of crustacea, and in the dogfish when the otolithic structures are destroyed. The normal compensating eyestalk movements, and the effects of loss of otocysts upon these movements, show some very interesting and suggestive analogies to the compensating eyeball movements of the vertebrates, and the relation of these movements to certain functions of the inner ear.

The comparative study of the function of the so-called “ear” structures of invertebrates and vertebrates leads to the view that in lower forms they constitute a sense-organ of equilibration, and not of audition, and that this equilibrium sense organ undergoes structural and functional specialization in the higher forms. Audition is not so evident a function of the lower as it is of the more highly developed ear.

XXVI. SOME NOTES ON TRACHOMA.

BY MATTHIAS LANCKTON FOSTER, M.D.,
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TRACHOMA is a contagious disease of the conjunctiva, probably of microbic origin, characterized by aggregations of cells or lymph corpuscles in its tissue which may or may not be separated from their surroundings by incomplete capsules of connective tissue.

In all except the earliest stage there is present in addition a certain amount of hypertrophy of the conjunctiva and a change in its epithelium.

The course of an ordinary case of trachoma is long and tedious, extending over several years from its inception to its disappearance from the shrunken, cicatricial conjunctiva. Its appearance at various stages differs according to the degree of conjunctival hypertrophy, and distinctive names have been given characterizing these stages. The names granular, papillary, mixed, etc., first used by Stellwag, do not denominate varieties, but roughly indicate the stage to which the disease has advanced. These names are in such general use that it is perhaps unwise to attempt to replace them by others, though more appropriate ones might be found. Nevertheless, I object to and protest against the use of the word granular for three reasons, viz.: first, because the conjunctival elevations are not granulations; second, because some authors denominate as granular the stage called by Stellwag papillary, and so cause confusion; and, third, because the use of the word tends to perpetuate the use of the term "granular lids" and to endow it with a certain sense, although it has long since lost any definite meaning it may once have possessed. Patients are informed by physicians that they have "granular lids" when they are suffering from conjunctivitis, blepharitis, or even simple hyperæmia of the conjunctiva, because these are all associated with a feeling of irritation or scratching dependent on the swollen condition of the conjunctival vessels. It is true that the physicians who make this diagnosis in such cases are not familiar with eye diseases, but the idea is strongly fixed among a large class that "granular lids" cannot be cured, and sometimes patients with easily curable affections leave the doctor's office without hope and afterward patiently endure discomfort because they have been assured that they have "granular lids." If physicians will not dispense with this term they should certainly be careful in its use, and, if they are not skilled in everting the upper lid, they can certainly draw down the lower and investigate it for trachoma before hazarding such a diagnosis. For these three reasons I prefer the use of the word follicular rather than granular to denominate the first stage of trachoma.

Several authors have endeavored to make a distinction between

follicular conjunctivitis and follicular or granular trachoma, but I am unable to recognize any distinguishing characteristics by means of which I may with certainty separate them. The arguments adduced in favor of such a distinction are that the irritation caused by instillation of atropine into the conjunctival sac sometimes produces a temporary condition which closely resembles follicular trachoma; that, as a rule, it retrogresses after a time without proceeding to the other stages; and that the arrangement and size of the follicular swellings are different. In regard to the first argument I would simply say that because a known agent will sometimes induce a counterfeit presentment of a disease it does not hold that the appearance of such a presentment when this agent has not been employed is even probably a counterfeit, and therefore the fact that follicular swellings which resemble trachoma may appear after the use of atropine does not furnish an argument that similar swellings which appear when this drug has not been used are not indicative of this disease. In regard to the second argument, it is known that some cases which were diagnosed follicular conjunctivitis have proceeded through the later stages. Further, in a disease in which retrogression may occur or be induced at different stages of its course, the stage during which retrogression may be most confidently expected is when the diseased tissue is imbedded in healthy surroundings, as is more or less the case in follicular trachoma before the conjunctiva has become hypertrophied.

Sometimes the follicular swellings are small, sharply-defined, and placed in rows; sometimes they are large, placed irregularly, and with ill-defined borders; but often they are intermediate between these two extremes in size and arrangement. If any distinction could be made histologically or pathologically between follicular conjunctivitis and follicular or granular trachoma, the size and arrangement of the swellings might be of assistance to us in clinically separating the two diseases, but as it is the difference in the arrangement and appearance of the swellings is so slight that in many cases it is an acknowledged impossibility for the most expert to distinguish them. Finally, until it has been satisfactorily determined upon rational grounds that the separation into two diseases is proper, it is unwise to create such a separation when a mistake in diagnosis may result in the condemnation of a

patient to a lifetime of misery because the early stage of trachoma was mistaken for follicular conjunctivitis, which, according to many authors, requires no treatment.

During the earliest or follicular stage the disease is associated very slightly or not at all with hypertrophy of the conjunctiva. It is characterized by the presence in the palpebral conjunctiva, particularly about the folds of reflection, of pale, semitranslucent bodies, the appearance of which has been likened to that of sago grains, or, when present in considerable numbers, to that of frog-spawn. Very rarely the follicular swellings are found on the ocular as well as the palpebral conjunctiva. During the past season a case was brought to my notice by Dr. Lewis in which the follicular swellings extended from both folds of reflection upon the ocular conjunctiva nearly to the cornea, while the loose membrane in the upper cul-de-sac was so swollen as to protrude as a fold of trachomatous tissue below the upper lid when everted.

As the disease progresses the conjunctiva becomes a little congested, covered with a vascular plexus, and hypertrophy begins. As the hypertrophy becomes more marked the red, thickened conjunctiva on the tarsal surface is thrown into folds which give it a velvety appearance, a condition termed by Stellwag papillary trachoma. When both the follicular swelling and the velvety tarsal conjunctiva can be seen on eversion of the lids it is known as mixed trachoma. This is perhaps the form most commonly met with, while the pure papillary form is rarely seen unless the chronic stage following acute blennorrhœa is thus known. As the conjunctival hypertrophy still increases the follicular swellings become more and more hidden from view, but they can be found on section the same as in the earlier stages. The tarsal conjunctiva then becomes almost smooth, thick, red-yellowish in places, and may be visible as a thick, red margin at the edge of the lid. By no means all, or even a majority, of the cases of trachoma reach this stage: the brawny of Stellwag. At a certain point in the development of the hypertrophy, not the same in all cases, the acme is reached, and retrogression commences by the transformation of the diseased conjunctiva into cicatricial tissue, which can first be noticed in the form of white lines on the tarsal surface. With the transformation of the conjunctival into cicatricial tissue the usual cicatricial contraction takes place and the stage of

sequelæ is well under way. The severity of an attack of trachoma is usually commensurate with the degree of conjunctival hypertrophy, and the greater the degree attained the more serious are the sequelæ which may be expected.

The cornea frequently becomes hazy and vascularized, a condition known as pannus. This appears to be due to an extension of the disease to the corneal epithelium rather than to erosion of that epithelium by the roughened palpebral conjunctiva. While the pannus consists simply of a deposit of recently formed tissue on the surface of the cornea, it may undergo resorption and disappear, but if it lasts long it is likely to be transformed into connective tissue, or to involve the corneal tissue proper and cause permanent injury. A peculiar case of corneal complication was presented in Dr. Pomeroy's clinic last summer by a Chinaman whose corneæ were completely covered by membranes resembling pterygia, three or four in each eye. These were torn off the right cornea in the early part of June, and one drop of tannin and glycerin, two drachms to the ounce, prescribed for each eye twice a day. About the middle of September he reappeared with his right cornea remarkably clear. The test of his vision was unsatisfactory, as he did not understand English and could not be made to comprehend what was desired of him; but it is certain that he was led to the clinic in June, but came alone without any apparent difficulty in September.

In regard to the view that trachoma is dependent upon some micro-organism, it must be acknowledged that notwithstanding the labors of Sattler, Michel, Muttermilch, Reid, Noizewski, and many others, there is such a lack of harmony in the results obtained that no one can say positively more than that he believes that at some future time a distinct micro-organism will be determined to be characteristic of this disease. Until this time arrives it will probably be impossible to determine accurately its origin.

Fuchs, Sattler, and others have reported cases in which trachoma has appeared as sequelæ to acute blennorrhœa caused by gonorrhœa or leucorrhœa. Fuchs states that in many cases he has been able to observe the development of follicular swellings in the folds of transition, and still more frequently to prove their existence by the microscopical examination of excised portions of the conjunctiva, and he believes the origin of the disease to be refer-

able to gonorrhœa. A very different theory of origin is advanced by Dr. German, quoted by Dr. Noyes, who claims that he traced the origin of three cases of acute trachoma to the poisonous effects of soil which had entered the eyes.

During the past year I had an excellent opportunity, in the female department of one of the institutions for the care of children in New York City, to observe the results of acute blennorrhœa from leucorrhœal poisoning. About one hundred eyes were involved in patients ranging in age from four to fifteen years. In a part of these cases the gonococcus was found in the discharges from both eyes and vulva. On their convalescence all of these eyes presented the typical appearance of chronic blennorrhœa, which cannot be clinically distinguished from that of papillary trachoma. After a course of treatment extending over a period of several months the velvety appearance of the conjunctiva receded, and in a certain number of the cases trachoma granules could be seen, while in the majority the conjunctiva resumed its normal appearance. Most of these patients were attacked with blennorrhœa before I was summoned to attend them, and I am, therefore, unable to state whether any of them had trachoma previously; but an examination of the eyes of the remaining inmates revealed a smaller proportion of the disease than among the convalescents. From the superintendent I learned that slight attacks of blennorrhœa were very common at all times among the girls affected with leucorrhœa, and had therefore been treated without calling in the aid of a specialist. Assuming this to be true, it occurred to me that a demonstration of the causal relation between leucorrhœa and trachoma, if such a relation exists, could be confidently expected by a comparison of the proportionate amount of trachoma in the male and female departments of this institution. It should be stated in passing that these two departments are completely separate and situated several blocks apart, so that the danger of the transmission of the disease from one to the other is of a minimum amount. Certainly leucorrhœa must be granted to be more common among the girls than gonorrhœa among the boys, but I found more trachoma.

In order to corroborate the statement of Meyer among the boys that statistics show that more men than women are affected with trachoma, I made an examination of the records of the Manhattan Eye and Ear Hospital for twenty years from October 1, 1875, to

October 1, 1895, but failed to obtain that corroboration. During this period there were registered under the diagnosis of trachoma, granular lids, granular conjunctivitis, follicular conjunctivitis, and follicular trachoma 6625 names, of which 3321 were of males, 3304 of females—practically equal numbers. It will, I think, be granted that among adults more men than women have gonorrhœa. If, then, the origin of the disease is gonorrhœal, we have the right to expect to find a distinctly larger proportion of cases among males, but there is nothing in these figures to indicate the least partiality of the disease for either sex.

The treatment to be adopted in any given case of trachoma depends upon the extent of the conjunctival hypertrophy. In spite of the assertions that a large percentage of the cases included by me under the name follicular will recover without treatment, I would not consider myself justified in any given case of this character if I did not advise energetic measures. The contents of the follicular swellings can be squeezed out without material injury to the conjunctiva, and the course of the disease be cut short. If we wait and temporize we may too often find that the time when a serviceable operation can be performed has passed and that the patient is obliged to endure years of suffering which might have been avoided. Expression I consider the most effective treatment of trachoma when the conjunctiva is so little hypertrophic that the follicular swellings stand out plainly and distinctly. When the hypertrophy becomes so great as to partly or wholly obscure these bodies the operation does not produce good results, and is, to my mind, contraindicated.

Several forceps have been devised for the performance of this operation, every one of which, so far as my limited experience extends, is competent to do the needed work. Special care should always be taken to avoid tearing the conjunctiva on account of the cicatrices which result. I have seen the fold of reflection materially shortened as the result of tears of the conjunctiva during this operation. This is unpleasant, and should be strenuously avoided. The forceps with which I am best acquainted are those devised by Drs. Noyes, Knapp, and Prince. With the first two I have had an experience which extends over several years, and that experience has taught me that the roller forceps devised by Dr. Knapp are dangerous instruments in the hands of any person

not thoroughly conversant with their use, and sometimes also in the hands of the skilful. The danger of laceration of the conjunctiva is very great when the rollers do not work easily and smoothly, and interference with their action is very common. Grooves, angles, and small apertures are always difficult to keep clean and polished, and are not tolerated in most surgical instruments to any greater degree than is absolutely necessary, because they are considered dangerous as affording lurking-places for sepsis and contagion; and I know of no good reason why an exception should be made in regard to this instrument, particularly as the existence of other forceps, of different pattern but equal efficacy, demonstrate that these niches are unnecessary.

Stafford's smooth-roller forceps appear to do away with only a portion of the objectionable features I have mentioned, but I have had no personal experience with them.

The forceps devised by Dr. Noyes I consider decidedly superior to the roller forceps, though somewhat clumsy, and have used them considerably. For the last few months I have used those devised by Dr. Prince, and thus far they have greatly pleased me. There is a sufficient spring to the blades to guard against lacerations of the conjunctiva, unless from very rough usage, while sufficient pressure is maintained to express the contents of the follicles. At the same time they possess the advantage of being easily kept in an aseptic condition.

After the operation ice-cloths should be applied to the eyes every few minutes for several hours. When this is done a marked reaction seldom follows the operation, but I have seen it appear very severely when this precaution had been neglected. For the first few days afterward the conjunctiva looks a little rough, sometimes almost trachomatous, but after some days of astringent treatment this roughness usually passes off, leaving the surface of the conjunctiva smooth and apparently healthy. In a certain percentage of the cases trachoma redevelops. This is frequently, I think, due to the haste of the operator, but not always, for the most careful surgeon may fail to remove all of the lymphoid deposit, particularly when there is much conjunctival hypertrophy, and the remnant may serve to maintain the disease. A sufficient number of these unsuccessful operations have not yet come under my observation to enable me to speak in regard to their influence in causing an increase or decrease of the hypertrophy. If it is

lessened, it may be advisable to extend the operation to the severer forms of the disease with the expectation of performing it several times before benefit can be obtained, but at present such an extension does not seem to me to be wise.

It is almost unanimously conceded throughout the world that in the treatment of the severer forms of trachoma our main reliance is upon sulphate of copper. This is usually and best applied by means of the crystal. The conjunctiva of the retrotarsal fold almost invariably needs the application quite as much as any other part, but is too often neglected. Next to the use of sulphate of copper, I think the best results are obtained from the use of a solution of tannic acid in glycerin, two drachms to the ounce. Exceptional cases which do not bear the copper treatment well are greatly relieved by this solution. It is best brushed on the everted lids, but can also be dropped into the eyes at home by the patient's friends. In the majority of cases it is my habit to combine the two methods, as this seems to afford quicker results. The best we can hope for in these cases is to check the advance of the hypertrophy and hasten the transformation into cicatricial tissue in order that the result of the disease may be as little injury of the eye as possible.

XXVII. THE EARLY DIAGNOSIS OF TUBERCULOSIS OF THE KIDNEY.

By WILLY MEYER, M.D.,
NEW YORK.

IN speaking of primary renal tuberculosis I do not, of course, consider the acute invasion of multiple miliary tubercles as it appears in the course of general miliary tuberculosis. What I intend to discuss is the chronic form of tubercular inflammation which primarily affects one kidney alone.

Let me first emphasize the clinical facts which, although still opposed by a few authors, seem to be well established, viz., that this form of tubercular inflammation is always at first unilateral and descends from the one kidney into the bladder (infecting on its way the ureter), and involves in the beginning one side of that

organ only; and that considerable time always elapses before the prostate, with the rest of the genital system and the other kidney, becomes affected. In many instances of commencing renal tuberculosis this one organ alone seems to be attacked by the deleterious inroads of the bacillus Kochii, while the lungs, intestinal tract, bones, and joints are absolutely healthy.

Thus it is evident that if we succeed in recognizing and removing the primary local manifestations of a most deadly general disease, it should be considered a triumph of surgical diagnostics and therapy.

With reference to the etiology, the question first naturally presents itself, How does it occur that a solitary tuberculosis develops in one kidney, or, more strictly speaking, in one of the papillæ of the kidney where the primary focus is always found? The answer is, by embolism. Just as we explain the primary tuberculous inflammation, say, of one of the condyles of the femur or of the tibia by assuming an arrest in a terminal branch of the nutrient artery of the respective bone of one or more tubercle bacilli, so the appearance of a primary renal tuberculosis must also be based on that generally admitted pathological fact, namely, that tubercle bacilli are carried with the blood into the different organs. At one time the bacilli enter the right, at another time the left, kidney.

Many may think that in order to have a kidney infected by the entrance of tubercle bacilli a latent tuberculous deposit must exist somewhere in the patient's body; but this is by no means necessary. We all know that everyone of us is exposed to the great danger of inhaling—oftener of swallowing—tubercle bacilli. Unluckily this is still a fact, in spite of continuously improved prophylactic and hygienic measures. If the bacilli be swallowed, infection of the intestinal tract does not follow as a necessary consequence. The infecting micro-organism may be absorbed with the chyle, and thus enter the general circulation.

Infection by embolism can take place in any part of the body. No doubt it is a rather rare occurrence to have the bacilli carried into one of the kidneys alone, yet it does occur and certainly oftener than has been heretofore accepted by the profession at large. In the majority of cases Koch's bacillus will settle and find a fertile soil in which to grow and multiply—in the kidneys of those individuals only who inherit the tendency to tuberculosis.

A healthy organism—by virtue of the vital energy of each cell-body—will successfully oppose the deleterious inroads of the germ, and it is discharged with the natural excretions.

I wish to mention, in passing, the so-called “ascending” tuberculous inflammation as another etiological explanation of tuberculosis of the genito-urinary system. That the prostate and epididymis in rare instances may be primarily invaded by tubercle bacilli which circulate with the blood, also must be admitted; but we have not only the right to suspect, nay, since Schuchardt's¹ most interesting observations, we have in our hands proof of the assumption that tubercle bacilli quite frequently enter the urethra with the gonococci, and may thus primarily infect the prostate or epididymis. By a similar route the female bladder also is subject to the same infection. On the other hand, the prostate or epididymis previously attacked by gonorrhœa in one of tuberculous parentage will often be the so-called “*locus minoris resistentiæ*” to tubercle bacilli carried by the blood. It is a matter of fact that gonorrhœa very frequently precedes primary tuberculosis of the prostate or epididymis.

As soon as the tubercle bacillus has gained a foothold in one of the kidneys destruction begins. A tubercle is formed quietly, without local or general manifestations; slowly it undergoes cheesy degeneration and destroys the renal papilla in which it had developed. Up to this time the individual does not feel or exhibit morbid symptoms. Polyuria may occur, but its true significance is seldom recognized early. Finally the cold abscess with its cheesy masses is evacuated into the pelvis of the kidney, and the urine suddenly becomes turbid and mixed with blood. The cheesy masses, passing down the ureter, will produce symptoms of renal colic. If now the physician makes a careful chemical, microscopical, and bacteriological analysis of the urine, the disease *can* be correctly diagnosed at once, but in the majority of cases one is more likely to think of a renal stone as a causative factor than of primary tuberculosis, and very naturally, too, as the trouble generally occurs in patients between the twentieth and fortieth year. Often the urine is very thoroughly examined, but the staining of portions of the sediment for tubercle bacilli is omitted, or the specimens are stained, but the bacilli are not recognized, and the

¹ Archiv f. klin. Chirurgie, vol. xlix. 2; and Centralbl. f. Chirurgie, 1892, No. 47.

correct diagnosis is not reached. The hæmaturia, which varies in degree, lasts several days and slowly ceases; the pains also decrease in severity; the urine after a while appears clear and macroscopically normal. The attack is now considered over and the patient discharged.

If, at this stage of the disease, cystoscopy is practised, a picture is sometimes seen which establishes with absolute certainty the diagnosis of primary descending tuberculosis of the urinary system, even if so far no tubercle bacilli have been detected.

As far as I am able to find in literature, the following observation has not yet been described. On viewing the interior of the bladder the cystoscopist perceives an absolutely healthy surface of the vesical mucous membrane and one perfectly normal ureteral opening. The mouth of the other ureter, however, is injected, and a number of circumscribed, clearly defined, inflamed areas of the mucous membrane can be seen between it and the slightly hyperæmic trigonum, leaving the interposed tissue unchanged in appearance, and thus one recognizes with marvellous and astonishing clearness the enemy's steps in a hitherto uninvaded field. I could not compare this picture better than to liken it to footprints in the freshly fallen snow. No other disease of bladder or kidney with which I am acquainted presents a similar cystoscopic appearance.¹ Should the microscope fail after repeated observations to confirm a diagnosis made by the cystoscope, it would be well to inoculate a rabbit by injecting some of the sediment into his pleural or peritoneal cavity, or the diagnostic value of Koch's tuberculin might be tried. In a case at Czerny's Clinic, at Heidelberg, the diagnosis was made by this means, tubercle bacilli appearing in the urine only after repeated injections of tuberculin.

On account of the injurious effects of these injections upon the general health of the patient, this method is not to be recommended.

It is scarcely possible that the cystoscopic picture described above could result from any other than a tuberculous irritation. Ordinary pus, not carrying specific micro-organisms, which passes the ureter and bladder after perforation, say, of an abscess containing a small renal calculus, cannot leave similar traces. It is not injurious to the epithelial layers of the vesical mucous mem-

¹ In these examinations I place great reliance in Nitze's instrument, and use no other.

brane; and should slowly growing renal tumor rupture into the pelvis of the kidney, simple hæmaturia would ensue, but no large amount of pus and cheesy deposits would be found.

In many cases, of course, the picture will not be as clear and pathognomonic as described above. I have seen it so far in two cases only. Especially will it be indistinct where, by previous catheterism, sounding, or irrigation, infection has been carried into the bladder—an occurrence which is very frequently met.

In view of this reasoning, the primary use of the cystoscope cannot be too strongly insisted upon.

Up to a short time ago no means of positive diagnosis in such cases was available, but luckily new, ingenious methods of examination and improved cystoscopic instruments brought forward recently have at last fulfilled a dream that for years has occupied the mind of every medical man interested in this class of diseases. I refer to the catheterization of the ureters, which permits of the bloodless, separate collection and analysis of the secretion of each kidney. In the female sex Kelly's excellent, well-known method should be preferred to others, on account of its absolute asepsis. Here the bladder is filled with air and the catheter introduced into each ureter with the patient in either the knee-chest or recumbent posture. In the male, Casper's new ureter-cystoscope also enables us to insert the tip of a small catheter into the mouth of each ureter under direct guidance of our eyes, and to push it up toward the pelvis of the kidney as far as desired. I have practised both methods and cannot praise them too highly. Casper's ureter-cystoscope has been in my possession for the last four months, and in three female and five male patients I succeeded easily in catheterizing both ureters and draining off each kidney separately.¹ One ought to take great care in these cases—besides proceeding aseptically—not to introduce the catheter too far toward or into the pelvis of the kidney, so as to avoid artificial infection of a healthy organ. If the urine of each kidney has been collected, careful analysis of the same will, in many cases, be an invaluable help in establishing a correct diagnosis.

Thus you have seen that at present we have quite a number of

¹ I would refer those who are interested in this subject to an article of mine read before the Section in Surgery of the New York Academy of Medicine, November 11, 1895, which will soon appear in the New York Medical Journal, entitled "Catheterization of the Ureters in the Male and Female with the Help of Casper's Ureter-cystoscope."

reliable means which, if properly applied, enable us to diagnose the primary tuberculosis of one kidney, even in its very beginning, in the majority of cases. The great influence of such scientific progress upon our therapeutic procedures is evident. Only extirpation of the diseased kidney will save the patient's life and save him years of more or less severe illness. In view of the sad prognosis of the trouble in question, this operation seems to me to be clearly indicated. To trust in a spontaneous cure of the disease under a general symptomatic *régime* would be by far too hazardous. The possibility of such a spontaneous cure must, of course, be admitted, but it certainly is a very rare exception, and so far not upheld by clinical facts.

On the other hand, by extirpation of the kidney, done as soon as possible, the trouble is not palliated, but actually cured. This point cannot be too strongly emphasized.

If patients, and, as I have frequently experienced, the family physician also, will not consent to such a radical treatment at this early stage of the slow but deadly disease, and prefer to temporize, the removal of the diseased organ, even at a later stage of this trouble, may still effect a cure. The important point is not to wait until a tuberculous inflammation of the genital sphere is added to the descending tuberculosis of the uropoietic system—a course which will happen with almost absolute certainty in the male—not to wait until the other kidney is similarly attacked by an ascending process. The operation *then* will only improve, never cure. It should be remembered that infection of the prostate generally sets in early.

Therefore, in cases of the sudden appearance of the above-mentioned symptoms, too much stress cannot be laid upon the necessity of establishing a strictly defined diagnosis as soon as possible, and of carrying out that treatment which alone is the logical sequence of the same, to wit, *early extirpation of the primarily diseased kidney*.

XXVIII. A CASE OF NEPHRECTOMY WITH SOME INTERESTING FEATURES.

By C. W. TOWNSEND, M.D.,
NEW BRIGHTON.

THE case which I bring before you, gentlemen, was of much interest to me, and I trust that it may not be devoid of the same to the Society.

Anna B., a young woman, the mother of three children, first came under my care some three years ago, complaining of severe occasional pain in the left lumbar region. She had suffered with this for four years previously, but it was now becoming so severe that she sought medical advice. Shortly afterward I saw her during an attack of typical renal colic, which was relieved by an injection of morphine. I placed her under the usual antilithic treatment, and examined the urine, which contained a slight amount of albumin, pus-cells in abundance, and a few oxalate of calcium crystals and blood-cells. The attacks of pain, however, increased in frequency and violence, and were accompanied with uncontrollable vomiting. As the woman was becoming much emaciated, I advised an operation, telling her that she had a stone in the kidney, and that with its removal she would gain her health. This was refused till her condition became so desperate that she and her friends believed that the next attack would end her life; then only did she consent, and last April she entered the hospital. The urine then contained a large amount of pus and a moderate amount of albumin and casts, with a few red blood-cells.

With the assistance of the staff, I exposed the left kidney by the lumbar incision and drew it into the wound, but to our surprise careful palpation and puncture failed to locate any stone in its substance or pelvis. As her condition previous to the operation had been so critical, we decided that removal of the kidney would offer her the only chance of recovery. This was rapidly performed, the cavity packed with gauze, and the patient returned to bed in a condition of extreme shock. The pulse was rapid and feeble, finally disappearing at wrist. Rectal and hypodermic injections of stimulants not bringing it up, subcutaneous injection of a normal salt-solution was used, but owing to the lack of circulation was not absorbed. As a last resort I punctured the femoral artery, after Dalborn's method, with the needle of a hypodermic syringe attached to an irrigator, and allowed some thirty ounces of salt-solution to flow directly into the artery. The result was a rapid cessation of the alarming symptoms and return of pulse to the wrist. The patient made a slow recovery, being discharged from the hospital in about six weeks, cured.

The urine was daily measured and examined; during the first twenty-four hours after the operation she passed over eighty ounces

of light-colored urine containing some pus. The next day the amount fell to about fifty ounces and the day following to thirty-six, from which figure it gradually worked up to forty ounces. She is now in perfect health, having regained her weight and strength, and is passing urine normal both in quantity and quality. The kidney was the seat of a chronic nephritis and pyelitis.

In concluding, I would like to call attention to the marked diuretic effect of the injection of the salt solution, a point which has already been brought forth in a previous paper.

XXIX. CONGENITAL DISLOCATION OF THE HIP, WITH PRESENTATION OF A CASE CURED.

By T. HALSTED MYERS, M.D.,
NEW YORK.

THIS subject has been exciting more attention among orthopædic surgeons than almost any other for the last two or three years. When Hoffa, of Würzburg, introduced the operation known by his name, it was taken up eagerly in Germany, France, and in this country. After a time the report began to be less favorable, and failures and deaths were recorded, so that at the present time the general feeling in this country seems to be against the operation. A brief *résumé* would therefore seem proper at this time to determine whether this conservative feeling is well founded or not.

I will not enter into a discussion of the etiology or pathology of this deformity more than to mention the two most popular views—the one, that the dislocation is the result of a traumatism received at birth; the other, that it is the result of maldevelopment of the acetabulum and head of the femur. Our knowledge of the exact conditions present has been greatly increased in consequence of the large number of operations which have been done of late, exposing freely to view all the parts involved. There seem to be two general classes of cases. In the first the acetabulum and head of the femur are well formed; in the second, both are more or less rudimentary. The secondary changes which occur when the child begins to walk have also been well demonstrated. I call attention to the latter fact because of its bearing on the prognosis, as all

authorities agree that the earlier treatment is begun the better the result will be.

While these cases are common enough in the large metropolitan orthopædic clinics they are seldom seen elsewhere, and it is not surprising that many are not diagnosed at once, and so treatment is delayed and valuable time lost. The striking diagnostic features of these cases are the telescoping of the joint, the shortening, the prominence of the trochanter, and the lordosis and marked limp when the child walks. In the great majority of them the head of the femur is upon the dorsum of the ilium, but there is not the limitation of motion and malposition of the limb usual in traumatic dislocations. There is, however, a little limitation to the abduction and outward rotation. In a series of 128 cases which I have lately investigated there was pain in about one-third of them. Sometimes it was severe and lasted several months; generally it disappeared after a few days' rest in bed. These attacks of pain were common during the periods of rapid growth, especially in girls from eleven to fourteen years of age. In many cases there was a spinal curvature, but this was due almost always to the short limb, and was easily corrected. The lordosis, however, was a marked feature. The shortening pretty steadily increased with the age, as we should expect; between one and two years it was five-eighths of an inch, while between thirteen and fourteen it was about two inches. Three or even four inches shortening is not uncommon in older cases. Many cases are reported in which the limbs have become so markedly flexed and adducted that the patients have been unable to get about with any comfort. None of the cases I have seen, however, have been crippled to this degree.

Until recent years, although a good result was occasionally recorded where all the surrounding conditions had been most favorable, the prognosis was generally too poor to make either surgeons or patients undertake a course of treatment without great reluctance. Thus it happened that when the children had pain in the joint they would be directed to wear some supporting splint for a time, or go to bed, or use crutches until the pain disappeared. If the limp was marked, a high sole was usually ordered for the short limb.

Hoffa and Lorenz have, however, lately devised reasonable methods of reducing the dislocation by opening the joint and deep-

ening the acetabulum. On the other hand, Paci and Schede have developed purely mechanical methods from which good results are reported.

Hoffa opens the joint posteriorly by Langenbeck's incision; divides the capsule at its insertion into the neck of the femur; frees the great trochanter subperiosteally from all the muscles attached to it; forces the head of the femur out of the wound; extirpates the ligamentum teres, and scrapes out the acetabulum so that it will contain the head of the femur easily. Reduction is then accomplished without difficulty. The superfluous part of the capsule is excised, the wound packed with iodoform gauze, and the limb immobilized in an abducted position. In children over six years of age it may be necessary also to divide the biceps, semimembranosus and semitendinosus, the adductors, and the muscles attached to the anterior superior spine.

Lorenz lays great stress upon the importance of sparing all the muscles controlling motion at the hip, as he believes that the ultimate result as to the function and solidity of the joint depends upon the amount of muscular power preserved. He varies his operative procedures according to the age of the patient, and divides the cases into three general classes, briefly, as follows: (1) The simplest cases, from three to five years of age. An assistant grasps the limb above the knee and draws it downward and into a slightly abducted position with a good deal of force, but without counter-pressure at the perineum. Then an incision 6 to 8 cm. long is made through the skin from the anterior superior spine of the ilium along the outer edge of the tensor vaginæ femoris downward and outward. The fascia lata is then divided in the same line. The anterior edge of the gluteus medius is drawn outward; the tensor vaginæ femoris, with sartorius and rectus, are drawn inward. A transverse division of the fascia lata from the wound outward liberates the gluteus maximus and makes the pulling down of the head of the femur to the level of the acetabulum possible by pretty powerful extension. The capsule is then opened by a crucial incision, the acetabulum scooped out with a sharp spoon, taking care to preserve the upper and posterior borders especially, and the head of the femur replaced.

In severer cases, Class 2, six or eight years old, the muscles must be spared, although there is greater difficulty in pulling the head down to the level of the acetabulum and in holding it there.

Lorenz has employed, in order to overcome this shortening, a skein of worsted fastened to the leg; two assistants exert strong traction on its ends, while counter-extension is made against the perineum. When the capsule has been split the reduction is not generally difficult. In some cases Lorenz used with advantage a screw-extension apparatus fastened to the end of the operating-table. This force was exerted always very gradually, and succeeded even in severe cases, and so made section of the muscles unnecessary. In children nine to twelve years of age, Class 3, with great shortening and but little telescoping, a preparatory extension treatment was necessary. The weight employed was about thirty pounds, and the treatment need not be continued more than two weeks. The effect of this extension was not very evident in some cases, and the main work had to be done at the operation by extension of the screw. Lorenz even in most difficult cases succeeded thus in avoiding division of the muscles.

After the head has been brought down the capsule is opened by a crucial incision, one arm reaches from the anterior inferior spine to the middle of the anterior intertrochanteric line, the other from the inner edge of the acetabulum to the top of the head. The ligatures, if present, are removed by forceps and curved scissors. The rudimentary acetabulum must next be correctly located by sense of touch. The sharp spoon is guided by the left forefinger, and the act of deepening the forefinger is not difficult. Lorenz uses for this purpose strong, sharp spoons of different sizes which have the spoon set at an angle with the handle. He prefers these to the bayonet spoons of Hoffa. The difficulty which tests most the skill of the operator lies in excavating an acetabulum which will fit well the head of the femur, whatever its shape may be. The head should now have no inclination to leave its new position when the limb is extended or even slightly adducted. Since the hemorrhage is considerable, the operation should be done as quickly as possible. In young children and in simple conditions Lorenz often completes the operation in ten or fifteen minutes.

In the after-treatment Lorenz limits the period of absolute rest of the joint as much as possible. In five or six days the children will, as a rule, get out of bed part of the time. By means of a stirrup fastened to the lower end of the fixation bandage the child can get about with help a few days after the operation. On the tenth day the fixation-splint is renewed. In the second or third

week standing and walking exercises are begun. In four weeks the fixation-bandage is entirely removed, and massage is begun with active and passive flexion, extension and abduction movements. In six weeks the children may stand alone. Lorenz has given up the use of supporting apparatus in the after-treatment. Secondary flexion and adduction are guarded against by active and passive extension and abduction movements.

The best results are obtained in children under ten years of age, but if the head is not deformed the operation is applicable to adults. Lorenz operated upon one patient twenty years old. A perfect result cannot be attained. Owing to the defective development of the limb there will always be some little shortening. A limp generally remains, though it is no longer the characteristic one which is so disfiguring. This depends upon the imperfect muscular fixation and control of the joint. The results improve as the parts accommodate themselves to each other.

Both Hoffa and Lorenz advise now against any attempt to reduce the dislocation without opening the capsule and deepening the acetabulum, as otherwise these cases, they found, would relapse.

Paci's method of treatment consists in forcibly manipulating the limb as if to reduce a traumatic dislocation; that is, the limb is first forcibly flexed as far as possible, then abducted, then rotated outward, then extended. Afterward the thigh is held completely extended and immobilized, and traction is applied. If the shortening is not completely overcome at the first operation a subsequent one will probably accomplish the reduction. In about two months the plaster-of-Paris splint is removed and an extension apparatus applied. About four months after the operation the patient is allowed to get up and walk with crutches. At night extension is reapplied. The limb is massaged twice daily, and once a day receives electrical treatment.

Schede's method is similar. He overcomes the shortening by traction, and reduces the dislocation by manipulations. He then applies a splint adapted to exert direct lateral pressure inward against the trochanter; it also keeps the limb abducted during walking. Not one step should be taken without this protection. The treatment has to be continued from one to five or six years. At night an extension of five pounds should be worn.

Broadhurst reports this month on fifty-two cases. He reduces the shortening by traction, or, if necessary, by subcutaneous section

of the adductor magnus, and the muscles inserted into the trochanter. He also says that when the acetabulum is so filled up that it is impossible for the head to be replaced, he removes with a gouge, made for the purpose, all that he can scrape away subcutaneously. He has never done the open operation of Hoffa or Lorenz, but has never had any difficulty in employing his gouge subcutaneously. After his operation he has noted a slight tendency to ankylosis. He reports no deaths.

Mikulicz claims that before the child walks the head and acetabulum are practically normal, and that even after this, although the capsule may be shrunken in the middle, or the opening of the acetabulum be too small for the head, both these difficulties can be overcome by continuous firm pressure applied over the trochanters. The same pressure, he claims, will adapt the head to the acetabulum and will cause any hypertrophy of the ligatures to disappear. He maintains in his treatment extension, abduction, and rotation outward of the limb for ten or twelve hours a day. During the rest of the day the patients wear a corset exerting some pressure on the trochanters.

As to the danger of the different methods: There is no danger at all, of course, in the mechanical methods or in Paci's manipulations.

I have notes on 301 cases of Hoffa's operation or some of its modifications, and among these are eleven deaths which were directly due to the operation. The mortality is therefore between 3 and 4 per cent.

From a study of the cause of death it becomes at once apparent that sepsis is the most important factor. Eight of the eleven died from this cause. Two died from shock, and one from iodoform intoxication and shock.

The extent of bone surface laid bare, the liability of blood-clot formation at the bottom of the wound from the poor drainage, the amount of manipulation necessary, and the location of the wound—all tend to make primary and secondary infection easy. All the writers ascribe most of their failures to this cause, and the operation should never be undertaken unless perfect asepsis can be assured.

The ultimate results of the operative measures:

Hoffa showed a case of bilateral dislocation operated upon over three years before. There had been no relapse. There was no

waddling gait; the joints were sound, and showed very good motion. The child ran about all day without pain or fatigue.

He presented two other unilateral cases which showed firm joints and good motion: one a girl of eight years, operated upon three years previously; the other two and a quarter years old, operated upon one year previously. He said: "In all my other cases equally favorable results were obtained after operations made in the manner recommended."

Reports from other surgeons are not so favorable.

Lorenz, however, is also very enthusiastic about this operation. He considers three to four years the most favorable age for operating, and does not like to operate after seven years. There are distortions of the head and neck which contraindicate operation, but these can be diagnosed before an operation is attempted. He had an uninterrupted series of bad results, and two deaths while working in Albert's clinic; but when he secured aseptic surroundings and technique he operated 100 times without a death and with but one small stitch-abscess. In these cases he had one ankylosis; three times marked limitation of motion in the joint; twice posterior dislocation recurred; and eleven times relaxation forward under the anterior superior spine. The latter cases he ascribed to anteversion of the neck of the femur.

Broca also had no deaths in his last twenty-two cases, and thought his statistics proved clearly that the operation, properly conducted by a surgeon and assistant equally experienced, is not really dangerous. He had twelve cases which had been operated upon for two years. One case had relapsed; one case became ankylosed. In three cases he performed osteotomy to correct flexion. Flexion and abduction were usually not perfectly free. Two cases walked without any limp whatever. The others are "considerably improved." They limp more or less, but they walk, play, and run all day, in marked contrast to their condition before operation. They no longer have attacks of pain in the joint. In brief, the ultimate results he considers good.

Brodhurst claims excellent and permanent results for his operations

The results of non-operative methods are much better also than they formerly were.

Paci reported on fifteen cases, and they were almost perfect a year or more after the operation. He said Redard, Nota, and

others had examined some of his cases, and were greatly pleased with the results he had obtained. On the other hand, Kermisson reports seeing a case said to have been reduced in this way, but it was not reduced. The head of the femur was above, not in the acetabulum. The functional result, however, was good. Paci obtains his reduction at once, and this is a very great advantage, and at once makes this treatment possible in hospital and dispensary practice wherever the old method of long-continued extension is impracticable. The traumatism inflicted also seems to be distinctly beneficial in tending to excite an inflammatory exudate, and so help to secure the head in the acetabulum. I have seen no reports from Paci lately, but Ambrosis¹ reports three cases of congenital dislocation of the hip which he had cured by Paci's method.

Schede reports on forty-five cases treated by his method. Four of these are absolutely cured; eleven are almost cured; fourteen are slightly improved; but the majority of them will have good results. Eight cases, however, have been failures, and eight cases have been lost sight of. He calls especial attention to the importance of early diagnosis.

Mikulicz reports five cases. Three of these have been entirely cured by his method in twelve, seventeen, and eighteen months; two others were improved, but not cured. The children were one, three and a half, and four and a half years old.

The treatment to be adopted will depend a good deal upon the age of the patient when applying for treatment. Of my 128 cases, nine were between one and two years, and twenty-five more between two and three years of age when first seen, and 102 were under ten years old.

Hoffa says his operation should not be done on patients over ten years old. Lorenz has operated upon a girl twenty years old, but advises early interference. Kirmisson considers the best age between four and six years. Paci's and Schede's methods may be applied a few days even after birth, the earlier the better. Paci has also reported good results from children in their teens.

In older cases with severe and disabling deformities, Kirmisson's method of subtrochanteric osteotomy seems to benefit the patients considerably and without risk. As far as I know, every case treated in this country by the older method of continuous

¹ *La Reforma Med.*, 1894, x. p. 14, 52-58.

extension and walking apparatus sooner or later relapsed after the apparatus was removed. The cases here mentioned of Paci, Schede, Mikulicz, and Brodhurst are therefore very encouraging. With an early diagnosis, the reposition can be readily accomplished, and a good result is more than probable with careful mechanical treatment for a year or more.

Where this treatment has failed after a fair trial, or in older cases with marked secondary changes, it seems to me Lorenz's operation is indicated, and is a safe procedure *if the operator is skilful and does thoroughly aseptic work*. This operation offers a very good chance for curing this serious deformity. Even where it has failed to cure, the relaxation was in most cases not backward, but upward under the anterior superior spine, which is a position of much greater stability than the original one, and this is a point of great importance, since the limp in these cases depends as much on the telescoping of the joint at each step as upon the actual shortening of the limb. The position may also be gained by mechanical means alone, I may add.

When we consider that these cases will certainly become more and more deformed and lame as they grow older, that about one-third of them will have repeated attacks of pain and disability, and that many cases are reported where the patients are rendered helpless by the flexion and adduction of their limbs due to this dislocation, it seems to me it is high time we should attempt their cure by some of the methods mentioned and stop sending them away untreated as incurables.

I wish to present this little girl to you to-day to illustrate this paper. Her history is as follows: There have been no deformities in the family. The labor was difficult, but nothing abnormal was noted until the child began to walk, when she was noticed to limp, and this has gradually increased. She was referred to me by Dr. William H. Sherman for treatment in February, 1895. She was then three and a half years of age. At that time the shortening was one and a half inches. All the symptoms of congenital dislocation of the hip were present, the telescoping, the lordosis, and limp being especially marked. She was sent to St. John's Riverside Hospital at Yonkers, and ether was given and reduction accomplished by Paci's manipulations. A good deal of force was used, intentionally, in order to invite an inflammatory adhesion of the head to the acetabulum. The limb was then abducted thirty

degrees and immobilized with a plaster-of-Paris spica. No extension was made, as it seemed to me that if at the time of operation the muscular shortening is entirely overcome the indication is to allow the head to remain firmly in the acetabulum after placing it there, rather than to pull it partially out again by traction, and so encourage relaxation. The spica was changed several times until July, when the walking brace she now wears was applied, and she was allowed to go about freely, up and down stairs, etc. This splint exerts pressure against the trochanter, and at the same time holds the limb constantly abducted. To aid in maintaining this abduction she wears a high shoe on the sound side. Perineal straps relieve the joint of part of the weight of the body. Motion is allowed at the hip, knee, and ankle. To-day the shortening is one-quarter of an inch. The head is firmly in the acetabulum; there is no telescoping, no pain, no lordosis. This child walks, when the apparatus is removed, with a "splint" walk, since she has only been allowed to walk without any support for five weeks, and then only a part of each day. This result would be considered a most excellent one if it had followed a Hoffa or a Lorenz operation, and could not have been accomplished without the careful attention to the details of the after-treatment afforded me by the staff of the hospital.

XXX. NEURITIS COMPLICATING DISLOCATIONS OF THE SHOULDER AND ELBOW.

BY M. A. VEEDER, M.D.,
LYONS.

A KNOWLEDGE of the precise nature of the injury to surrounding softer tissues that may attend dislocations is especially important in the case of the shoulder- and elbow-joints. For example, in dislocation of the humerus the head of the bone is very liable to be crowded forcibly against the nerves of the brachial plexus, and of the posterior cord of the plexus especially, originating symptoms that may appear widely in the parts supplied by the musculo-spiral, circumflex, and subscapular nerves which arise from this cord. In like manner the ulnar and median nerves may become involved in dislocations at the elbow. The symptoms attend-

ing this accident may be slight or severe, according to the extent of the lesion, and may present varying characteristics according as the trophic, motor, or sensory filaments of the nerve are involved. There may be transient or complete paralysis of one or more muscles, as shown by the inability to execute certain movements. At the shoulder this impairment of the muscles may have the very important consequence of permitting recurrence of the dislocation almost spontaneously when the arm is placed in certain positions. The writer has seen a case in which there had been such recurrence nine times, and in which the deltoid and teres muscles were plainly atrophied and partly paralyzed. Such patients are very apt to imagine that the dislocation has not been completely or properly reduced, but it will be found that there is no impediment to motion in or about the joint, but, on the contrary, perhaps there may be too free motion because of muscular relaxation and loss of control. Putting the arm in particular positions will show which muscles fail to act, and they also may be found flabby and atrophied. In the case of injury of this sort to the ulnar and median nerves at the elbow, muscular contractures may appear in the hand and arm. The symptoms thus far enumerated are the final outcome of the inflammatory condition. In the more acute stages, in addition to muscular spasm or loss of power, the tissues throughout the region supplied by the nerves affected may become oedematous, the skin reddened and glossy, and there may be loss of sensation on the one hand, or burning pains such as characterize gunshot wounds of nerve-trunks, on the other. Recently the writer has seen two cases in which the symptoms mentioned were of the most decided character throughout the entire area supplied by the musculo-spiral nerve. In one case the hand became so painful immediately on receipt of the injury that the patient did not notice at first that the shoulder had been dislocated. The subsequent history showed that these pains were due to a very serious lesion of the musculo-spiral nerve, and not to any direct injury of the hand, all the characteristic symptoms of neuritis appearing throughout the track of the nerve. Slight and transient symptoms betokening injuries of this character are present in many cases of dislocation. It is only occasionally that they become so serious as to attract attention, and even then they may be overlooked at the outset, and being first noticed at a later stage may be supposed to be of rheumatic origin, or to have arisen

from the pressure of bandages, disuse of the arm, or even failure to reduce the dislocation; whereas they are involved in the very nature of the injury.

If complications due to nerve injury are at all severe, recovery is so tedious compared with ordinary dislocations that it is not strange that patients, not understanding the source of the difficulty, become impatient and inclined to find fault. Hence it is specially desirable that the physician should be able to give a clear account of the injury and its prognosis. Sometimes the full effect of the damage done to the nerve may not appear until after several months, or until the arm is used in some employment that is too laborious and exacting. A very instructive case of this sort came under the observation of the writer in which the elbow was much bruised in the process of dislocation, but in which it did not become apparent how serious the injury to the ulnar nerve had been until the patient resumed his occupation, which involved more or less use of the shovel. The result was that œdema reappeared in the track of the nerve, followed by very rapid atrophy and contractures, the ring and little fingers shrivelling up and becoming claw-shaped. This condition disappeared in great measure, however, on avoidance of the particular kind of labor that had brought it on. At the end of three or four years the atrophy and contractures were scarcely noticeable, although the arm remained weak, being in all probability permanently slightly paralyzed.

In dealing with such cases the first question that arises is as to the precautions to be taken at the time of the reduction of the dislocation. It is essential that the anatomical relations of the parts should be understood and kept in mind so as to avoid every manipulation that would tend to increase the injury to nerve-trunks that may have been caught and pressed upon by the dislocated bone. There is no case in which this is more likely to be necessary than that of dislocations of the humerus. Here the upper margin of the dislocated head of the bone rests against the neck of the scapula, or against the clavicle with the axillary structures put upon the stretch beneath it. If in this condition the elbow be pulled directly outward from the side of the body the entire bone will act as a powerful lever, the fulcrum being at the point of contact with the scapula or clavicle, as the case may be, and increased tension being exerted in the very direction in which the axillary nerves are already stretched. The hand making traction at the elbow has

the advantage of the long arm of the lever, so that but little resistance will be felt even when the axillary structures are being subjected to very great pressure and stretching. Moreover, it is in the very cases in which the nerves are most injured that the muscles also offer the least resistance to such manipulations, on account of their becoming paralyzed, increasing the possibility of doing harm unconsciously.

In reducing the form of dislocation of the humerus to which reference has just been made, it is wise to keep one hand in the axilla so that the amount of pressure brought to bear in that location may be estimated by the tension felt in the tissues, and for the purpose also of pulling the head of the bone outward in the direction of its socket, so as to relieve the pressure on the underlying parts. If it is proposed to carry the arm directly upward so that traction may be made in that direction, which is a very effectual way of reducing the dislocation, the elbow should be swept forward and inward rather than outward, so as to relax the tension upon the parts in the axilla rather than increase it. In reducing dislocations other than those at the shoulder the question of injury to nerves during the requisite manipulations does not become so prominent. In cases of dislocation complicated by fracture with large displacement and much distortion of the parts, however, it is a point that it is well to keep in mind. Otherwise than in the cases just described, but little can be done for the prevention of injuries of this class.

Subsequent to reduction, however, there are questions in regard to treatment that demand consideration. Fortunately, in the great majority of cases the injuries to nerves attendant upon dislocations are not serious, resulting in nothing more than transient soreness, stiffness, or muscular relaxation, as the case may be, and requiring little or no treatment. On the other hand, cases may be met with at any time that will tax the resources even of the most skilful. Such cases may promise equally well with those of ordinary character at the outset. The dislocation is very easily reduced, it may be, and yet strength does not return to the arm, and pain and swelling do not cease. The patient becomes discouraged, and goes from surgeon to surgeon, receiving all sorts of suggestions in regard to the nature of the injury and its treatment, but no immediate relief. The symptoms being such as have been indicated throughout the course of the discussion, the question is as to what is best to be

done to prevent inflammation, and to promote repair in the nerve-trunks that have been damaged. Practically this resolves itself, for the most part, into a question as to the effect of use or disuse of the arm at different stages in the process of healing. As in the case of the patient using the shovel, already mentioned, too severe usage even at a late stage, after all active symptoms had apparently subsided, may be attended by the appearance of consequences as untoward as contracture and atrophy. At an earlier period, during more active inflammation, even moderate use of the arm may produce such pain, swelling, muscular spasm, and loss of control that it may be difficult to induce the patient to submit even to passive motion, if this be thought desirable or necessary at this stage. A section of nerve and the tissues surrounding it being bruised and perhaps reduced to pulp, and it being impossible to adjust and retain the parts in apposition directly by the aid of sutures, it is evident that repair must be difficult and liable to interruption. There must be a filling in of tissue and more or less cicatricial formation. If during this process the nerve be pulled about by active or passive movements of the limb, and acute inflammatory symptoms at once appear, the danger of permanent impairment of function would seem to be increased. If, on the other hand, the bruised tissues be allowed to heal with as little disturbance as possible, the restoration of the integrity of the nerve being the main point kept in view in the treatment, there may ensue considerable stiffening of the arm due to its disuse and to trophic changes causing adhesions among the muscles and their aponeuroses. As a rule, stiffening of this sort, unlike deprivation of nerve-supply, does not result in permanent impairment. It is the lesser of two evils, and will disappear gradually as the arm comes to be used, or an anæsthetic may be given and the adhesions broken up whenever the process of repair has reached a point that it is thought will justify such interference. In case the adhesions are forcibly broken up at an early stage, it may be found that they will recur because of the inability of the patient to endure even passive motion because of pain and spasm. Such recurrence indicates the existence of a troublesome pathological condition, essentially of an irritative nature, at the seat of the primary lesion in the case. Nevertheless, the tendency is toward recovery even in cases as bad as this, although it may be slow. At the end of a year or two the motion of the arm will be found, as a rule, to

have become perfectly free, atrophic and paralytic symptoms due to deprivation of the nerve-supply alone remaining. In all cases of this kind massage and electrical stimulation are of service, improving the nutrition, preventing adhesions, and tending to restore the nerve-supply in so far as it has not been absolutely destroyed. Still there are cases in which every resource that can be imagined will require to be supplemented by patience.

Most of the points that have been mentioned are based upon observations made by the writer in the course of ordinary general practice, and verified by references to the somewhat scanty literature of the subject. It would seem that neuritis complicating dislocations, particularly at the shoulder and elbow, is much more frequent than is generally supposed, it usually occurring in such a mild form as not to attract attention even when the characteristic symptoms are quite well defined. The purpose of the present paper will have been served if renewed attention shall have been drawn to a subject that should interest the general practitioner especially, who is liable to meet with these cases at any moment, and who must deal with them on the spot no matter what their character or degree of severity.

DISCUSSION.

DR. H. S. DRAYTON, of New York: I would add simply a word commendatory of the suggestions made by the author with reference to treatment. A few cases have come under my observation showing sequelæ of injury, chiefly of the shoulder, and, like the author, I have noticed that frequently the patients are unable to give a very good history of the trouble. There seemed to be a chronic rheumatoid condition, and where there was also wasting and irritation I found massage one of the best remedies, associated with mild galvanism. In one case in particular, affecting the left shoulder, with uselessness of the hand, after three or four months' treatment with massage and galvanism there was considerable redevelopment of the deltoid, disappearance of contractures in the hand, and power to use this member.

XXXI. HOW TO PREVENT RIVER AND STREAM POLLUTION. .

By THOMAS E. SATTERTHWAITE, M.D.,
NEW YORK.

THE problem of how we can put a stop to the increasing pollution of our rivers and streams is properly attracting a great deal of attention for reasons that are quite apparent. We cannot drink filthy water ; it is not fit even for household purposes ; in fact, its mere presence is a constant menace to anything that has flesh and blood.

Now, as it is dangerous to health and offensive to our senses, and so constitutes a public nuisance, it follows that medical men should be among the foremost to plan measures for abating it so far as is practicable ; and the public has a right to expect such action of us, because we largely control the operations of our local and State boards of health.

Now, as I have been unable to find any simple statement of the *data* essential for the solution of this problem, I propose in this brief paper to present them as seen by myself at the present time. Facts we have in abundance, it is true ; but they are mostly scattered through our State reports, journals, or pamphlets ; while much that is found in manuals on the subject is ill digested or possibly written in the interest of some special system.

At the outset, however, I must ask you to go back a little, so that by viewing the situation from a distance we may get the proper perspective. In this way it will be possible for us to observe some of the milestones in the sanitary progress of the last half-century. We shall also note that England has been the leader in modern sanitary science. But necessity compelled her. London, with its enormous population (in 1894 it was four and a half millions), is traversed in a serpentine manner by a small and comparatively shallow river, which receives the waste from houses and works of all kinds. It is easy to see, therefore, that river pollution was early brought to her attention.

Indeed, in 1848, Parliament permitted the discharge of waste into English rivers and streams, for in many of the densely settled English towns there were no sewerage systems, and an immense amount of soil saturation had taken place. Now, this public-

health bill of 1848, which permitted the discharge of crude sewage and waste into rivers and streams, relieved the contaminated soil of its accumulating filth in a measure; but the rivers and streams became fouler than ever. In 1854, however, England was visited by its third great cholera epidemic, and it was noticed that there was some connection between this disease and polluted drinking-water. There was then in Broad Street, London, an old pump, and it was seen that cholera had a special preference for persons who drank this particular pump-water. Of course, they failed to recognize, as we do now, that the disease is almost wholly contracted from drinking-water that has been fouled by the *dejecta* of cholera patients.

And yet nothing further of importance was attempted in the way of legislation until 1876. Then the Rivers Pollution Bill was passed by Parliament. Its object was to annul the dangerous features of the bill of 1848; but it failed to give substantial relief, because its provisions were permissive, not mandatory. Persons violating this Act by polluting streams rendered themselves liable for legal proceedings *by individuals*; but individuals usually did not care for a contest with powerful corporations, which were the chief offenders. It was twelve years before the initiation of legal proceedings became compulsory, and the State was made the prosecutor. By the Act of 1888 each county was compelled to take action, whenever a violation occurred within the limits of the county; while the local government board, a higher authority, was directed to act whenever the violation involved contiguous counties, and therefore threatened a war of interests. But even this fact proved inoperative in some respects.

Prior to the passage of the bill in 1888 there had been formed, under the leadership of two well-known sanitary engineers, Sir Joseph Bazalgette and Mr. Baldwin Latham, a commission, called the Lower Thames Valley Main Sewage Board. The object of this commission was to get all the towns north of the Thames between Windsor and London to unite in a comprehensive sewerage scheme. Several futile efforts were made by these engineers to get the several communities to unite. Finally, in 1884, a last effort was made; but Parliament in the end vetoed the measure, because it called for gigantic disposal works near London, and it was thought improper to treat such a vast mass of sewage at the point named by the engineers. Besides, it was

found that each community preferred to manage its own sewerage system, as it did its water-supply and street-lighting plant. So, after costly litigation, the whole project was abandoned. About this time similar attempts were made at co-operative trunk-sewer schemes, but so far as I know they failed; and at the present time, just as the Thames Valley towns successfully opposed the Thames Valley intercepting sewer project, so the Passaic Valley towns in New Jersey and the Bronx Valley towns in New York are opposing the conjoined and co-operative intercepting sewerage schemes that have been projected for these valleys. There are many and well-founded objections to these co-operative sewers where they assume large proportions. Where, however, small communities or scattered rural settlements unite with their neighbors, there may be manifest advantage, both on the score of economy and satisfactory results.

Let me stop here to consider some of the most necessary *data* in our problem. And to begin with, let me remind you that the waters of our rivers and streams have a *threefold* source: First, they are derived from springs, then from subsoil water, and lastly from the liquid of various sorts of waste, discharged into the running water, after more or less artificial or natural purification. For we know that there is always a tendency for running water to purify itself. Some sorts of animal waste will be eaten by fish, and at any rate minute animal or vegetable *débris* suspended in water will be eaten by microscopic organisms, while the oxygen of the air and of the water will further assist in the work of purification. And yet there is a limit to the capacity of a stream to purify itself; and these methods of nature will be ineffectual if sewage is not sufficiently diluted, or there is lack of oxygen from any cause.

Now the sources of water-pollution are also *threefold*. At this point I beg to say that sewage is different from manufacturers' waste—a difference that is not always appreciated in this country. They generally differ widely in chemical characteristics; in their effects on our health; and in respect to the methods necessary to make them inoffensive.

Sewage is a complex material, composed of human excrement, urine, kitchen slops, the overflow from laundries, and the drainage from barns, stables, and slaughter-houses. Sewage, taken as a whole, has an alkaline reaction; and this point is important to

recognize. On the other hand, *manufacturers' waste* is such a liquid as may flow away from print works, bleacheries, tanneries, woollen-mills, gas-works, etc.; and when taken as a whole it is usually acid, because the by-products of these work are usually acid.

The third source of pollution in running water are *surface-washings*. Occasionally they are very offensive, as in large cities or towns, especially in dry weather. In New York, for example, the solid portions of the surface flow are largely composed of horse-mauure with other animal or vegetable refuse to a less degree; but in most rural communities, surface-washings are a minor source of the pollution of rivers and streams. For these solid matters form but a small part of the total flow, and are then so much inter-mixed with soil that they are fairly disinfected. The chief harm of surface and storm waters is economic. They tend to fill up the beds of rivers and streams, so that mechanical means have often to be employed to remove the deposits; but ordinarily they are entirely carried away in times of storm and freshets.

Now, when a sewerage scheme undertakes to collect the surface water, in addition to sewage and waste, the method is known as the *combined*. Drains that would ordinarily empty into streams or brooks are by this system turned into the sewers, which naturally should be capacious enough to carry off the maximum of flow from all the three sources named—even in times of storm or flood—if they are to fulfil the tasks allotted to them. This is the method employed in large cities like New York.

But there is a growing tendency to look with disfavor on the combined system in most localities, and I will enumerate some of its disadvantages. There is no way of determining what the maximum flow is going to be, and therefore the proper size for the mains in such a system is pure guesswork. It is, by necessity, more expensive than the *separate* system on account of its great capacity, and, being so capacious, the current is apt to be slow, and therefore is likely to admit of sedimentation and its associated condition, the development of sewer-gas in more or less quantity. Then, if disposal works are found necessary at the outlet, the expense of treating each gallon of flow will be enormous in time of storm and flood, when the flow will be anywhere from twenty-five to a hundred and more times greater than in dry weather. In fact, it is readily conceivable that the amount of waste may at such

times be so great that disposal works cannot handle it ; and yet disposal works are very sure in the near future to be regarded as indispensable to every large sewerage system where filtration is not used. Finally, combined systems call for a large amount of brick in their construction, and it is a fact of common knowledge that brick sewers are apt to leak and require extensive and expensive repairs.

It is not within the prescribed limits of this paper to allude to the pollution of running water, by privies, cesspools, house-drains; etc. These accidents are so easily prevented by any ordinarily efficient board of health that a discussion of them here is unnecessary.

What chiefly concerns us, as a profession, at the present moment, is the pollution of our rivers and streams by domestic sewage and manufacturers' waste, as they are diluted by the running water in our sewerage systems.

Now, there are three principal methods for the disposal of waste by the water-carriage system: First, we have the discharge of *crude sewage* into the stream. Unfortunately, it is too common a method, though applicable enough in exceptional cases. For example, in New York and Brooklyn it works fairly well, on the whole, so long as the mouths of the sewers discharge directly into deep water, with a rapid current. After a greater or less time, this waste finds its way to the sea. It is carried down to the North and East Rivers by gravity, and the salt water of the rivers disinfects it. But there are some grave objections to it now in some parts of these cities. There is not always gravity enough to carry the waste swiftly to the salt water, and much of it may be detained in the mouths of the sewers by tides and winds. And in any case, if the current at the outlet is sluggish, the waste will be precipitated by the salt water and make a foul deposit on the bottom near the sewer mouths. Besides, much of that which escapes oscillates back and forth with the rising and falling tides. This condition of things was made the subject of a special investigation by the New York Board of Health at Flatbush in 1893, and on September 14th of that year it recommended Governor Flower to require the Sewer Commissioners of Flatbush to prepare plans for disposal works, and also recommended that where other outlets discharged under similar conditions some method should be adopted for the treatment of the waste.

But even if such sewers discharge directly from the heads of

piers, which is rare, or into a rapid current, there will not only be precipitation in the salt water, but contiguous shores will receive more or less deposit or refuse, and there will be a constantly increasing quantity of it.

Already the citizens of Coney Island, Gravesend, and Sheepshead Bay are complaining of the garbage and refuse that are now piled up on their shores, and New Jersey people are complaining of the nuisances from Sandy Hook down the beach for many miles. In fact, it is only a question of time when the State Board of Health will be called upon to introduce legislation to prohibit the discharge into our rivers and streams of all kinds of liquid waste and refuse.

It may be proper enough to discharge these substances into torrents like the Niagara River, as is now done ; but it is a direct menace to our health to discharge them into the small and sluggish streams of thickly settled communities.

The story of the typhoid epidemic of 1890 in the Mohawk Valley illustrates and emphasizes this latter statement.

The Mohawk River prior to 1890 had been receiving the sewage of nearly every large town on its banks—Rome, Utica, Schenectady, and others having complete sewerage systems which discharged crude sewage directly into the river.

In July, 1890, Schenectady had 300 cases of typhoid, with 20 deaths. In the October following, Cohoes, lower down the river, had an epidemic of typhoid, with 1000 cases, though of mild character. In West Troy, which is on the Hudson, below the mouth of the Mohawk, the epidemic began in November. A hundred cases were reported. In December the epidemic had reached Albany, having travelled down the Mohawk and Hudson Rivers, 26 miles in all. The total number of typhoid cases was 1800. All of these cities used drinking-water polluted with sewage, and although in West Troy and Albany there were other sources of drinking-water than the Mohawk, all but 26 of the typhoid cases had drunk the sewage water. Here there is an example of the disastrous effects of turning crude sewage into a river the water of which is subsequently used for drinking-purposes.

Any trunk sewer or large sewer that carries household waste a long distance without its being disinfected is necessarily more or less of a menace. Such sewers should be ventilated at stated intervals—say every 1000 feet ; and yet through these ventilators

foul gases can escape, possibly laden with typhoid germs. Liebermeister, in his famous article on "Typhoid Fever," published in Ziemssen's *Cyclopædia* (vol. i. p. 56), quotes the case of a German girl, who, after contracting typhoid fever, returned to her native village for treatment. Her *dejecta* were thrown on a dung-hill. Several weeks later five persons were employed to remove some of the dung. Four of them took typhoid. Nine months later two men were employed to complete the removal of the dung. One of them took typhoid and died of it.

And there is the expert medical report on the recent typhoid epidemic at Woking in England, recorded in a recent number of the *London Lancet*. Mr. Luke, the medical officer, after an elaborate examination, came to the conclusion that the origin of the disease was almost wholly to be laid to *sewer effluvia*. Now these occurrences point to the fact that the exhalations from typhoid *dejecta* can produce the disease. Then sewage must flow at the rate of five miles per hour to prevent sedimentation, and if it cannot get this speed by gravity it must be helped along by pumping.

Finally, any large sewer designed to carry waste a long distance will be expensive to construct and perhaps expensive to maintain. It is generally believed to be the most costly and least desirable of the three methods. It has been computed that the great Bronx Valley sewer, if ever it is built, will cost \$3,617,310, or over \$170,000 a mile; this is on the *separate* system, and is only a *provisional* estimate. It is safe to say that these figures do not represent its real cost. I have in mind the original estimate made by an engineer for a sewerage system which is now being constructed. The actual cost to date is more than three times the original estimate; but the original plans have not been carried out in detail, and the work is far from complete. If the present Bronx Valley scheme is carried out, it will in my opinion be the most expensive, most offensive, and most unsatisfactory of the modern methods for sewage disposal.

But both this and the Passaic Valley scheme come under the head of what may be called *personal* legislation as distinguished from *sanitary* legislation. I have not learned that any reputable medical sanitarian indorses either one of them.

The second method of sewage disposal is by *filtration*, the object of which is to purify sewage by passing it through porous soil,

sand, gravel, coke, etc. Under this heading come *broad irrigation* and all the methods pursued on *sewage farms*.

Filtration methods have become quite popular of late in some of the principal European cities. Albert Shaw, in his *Municipal Government in Continental Europe*, 1895, describes how Paris follows the filtration plan at Gennevilliers, near the city limits, where there is a sewage farm on a plain in a bend of the river Seine. In 1892 there were about 2000 acres under irrigation at Gennevilliers and 30,000,000 cubic metres of sewage were treated annually, and the effluent water that percolated through the soil of this farm on its way to the Seine was purer (biologically speaking) than the famous Vannes water. While this effluent contained only about one dozen microbes to the cubic centimetre, the Vannes water contained about 62; in fact, we have the statement from George E. Waring, Jr., that he drank the effluent when visiting the farm. It is also said that this farm is successful from an economic point of view; that the crops have quadrupled on the farm, and that the population has doubled within ten years. It is safe, however, to be a little cautious about accepting French statistics of this character. As a matter of fact, typhoid fever has been very prevalent in Paris for some years past.

Berlin, however, has the same plan. This city being situated on a plain, the sewage has to be pumped to its ultimate destinations, which are sewage farms, distant as much as fifteen to twenty miles. There are several of these farms round about Berlin. Together they embrace a territory of more than thirty square miles, or, as the city embraces only twenty-five square miles, the farms occupy a larger area than the city itself. The whole system, including the cost of the land and cost of the sewers, will make the expense about \$30,000,000. The population of Berlin in 1892 was about 1,500,000, so that its total debt will reach about \$20 per head. But it is claimed that the profits from the farms are so great that within a reasonable time they will have earned enough to pay for the whole investment, and will then aid materially in reducing the municipal taxes.

In Hamburg, Germany, a modification of the filtration plan was applied to the waters of the river Elbe in 1893; and whereas, it is said, myriads of cholera germs remained over from the cholera epidemic of 1892, they were entirely removed by filtration. Most

of the principal German towns, such as Breslau, Dantzic, and Brunswick, have adopted some kind of filtration for sewage.

This method has also been very popular under the administration of the present Massachusetts Board of Health. Their report for 1895 shows that they usually recommend the irrigation method of filtration, the sewage being spread over filter-beds near the stream into which the effluent is to pass, and from six to eight feet above the river at high-water mark. Communities are recommended by them to have about one acre of filter-beds to every 1000 or 1500 inhabitants, for present uses, and additional land to provide for the growth of the population. For example, Framingham, Mass, with a population of 10,000 in 1890, has about twelve acres of filter-beds in use; Marlborough, with a population of about 14,000, has also twelve acres in use. But reports from these sewage farms are not always satisfactory. Pullman, Ill., that model community, has not found irrigation a success; and East Orange has abandoned her farm. Some of the chief objections are these: Filtration in sewage farms, at least, does not appear to destroy all germs, as shown by the results at Gennevilliers. The process is slow, requires a great deal of space, and may be interfered with in winter by ice and snow, though on this latter point there is a conflict of opinion. Manufacturers' waste must be excluded; such material as gas-tar from the gas-works will either stop the process or ruin the crops. Careful supervision is required to prevent odors. Eventually the soil must become saturated, and portions of the farm will have to be abandoned—temporarily, at least. And so such filtration methods may in the end prove costly failures, and yet they may be applicable in certain cases, as the experiments at Berlin and Paris show. The original cost is apt to be very large. Birmingham, England, which in 1891 had a population of 429,171, has a new sewage farm that has cost her \$2,000,000, and it costs her \$275,000 a year to run it, though this expense is offset by the profits from the farm, which are annually \$125,000. My personal experience has been that it is an almost intolerable nuisance to have crude, untreated sewage spread over farming land. The stench is horrible.

But it appears that you can treat sewage and waste so as to destroy all disease germs, converting these offensive substances into a germless, inoffensive residue, or *sludge*, as it is called, and a sterile liquid or effluent that can be discharged into a stream with-

out polluting it. And this brings us to the last method, which is *precipitation*. It is not my intention to enumerate the various chemical and other reagents that are used in chemical and mechanical precipitation, nor the various processes. They are too numerous to mention. If I allude to a few of them, their plan of action will be sufficiently clear. The most common precipitants are lime, iron, clay, copperas, sulphuric acid, and alum. The particular process or the combination of processes will vary with the physical properties of the waste, the needs of the community, the facilities at hand, and the cheapness of the reagents in the locality. In these matters, every locality must be a law unto itself. Personally speaking, I have had some familiarity with the *Amines method*, devised by Mr. Wollheim, a New Yorker by birth. It has been used in several English towns. At Wimbledon, England, I have several times visited the works and seen them in operation. The process consists in collecting the sewage and waste in a series of tanks, treating them in the sewer mouths as they enter the tanks with lime and herring-brine. They use unslacked lime, and the brine is derived from the scouring of herring-barrels, which they have facilities for buying at a very low price. The process is therefore simple and cheap. The cost has been from one to one and a half cents per 1000 gallons of sewage. The lime and salt water throw down the sewage so as to form sludge, while the effluent flows off into a small stream discharging into the river Thames. Professor Klein, the biologist of the works, has reported that this process destroys *all* germs, and his tests were the most rigid known to medical men at the time they were made. Besides, this process is perfectly inoffensive. Neither sludge nor effluent is alterable by heat or exposure to the air, and what is known as *secondary decomposition* cannot occur. The sludge has been used for farming purposes, though I doubt if it has been found to have much market value. Then there is the popular A, B, C process, in which clay and alum are mixed with magnesia, salt, blood, and animal charcoal. The sludge is said to sell at a high price for farming purposes—\$17.50 per ton.

The Amines process would be suited for sewage and manufacturers' waste, where the latter preponderates. On the other hand, there are acid processes that would be better adapted for sewage proper. Sulphate of iron and the magnetic oxide of iron are the chief characteristics of these processes, though often used

together with lime, alum, magnesia, etc. The salts of iron disinfect, while alum and magnesia decolorize and precipitate. The magnetic oxide is also used as a filter. At some date in the future it is reasonable to suppose that the electric current will be used. It acts by liberating chlorine gas and oxygen in intensely active states at the positive poles, and they reduce the sewage to harmless solids and liquids. The cost of precipitation is usually quite small, comparatively speaking, and the newer reagents are generally cheaper than the older ones. By this method, also, there is a broad field opening before the chemist, as chemical reagents furnish in themselves the agencies by which sewage is sterilized. May not chemists find ingredients in the manufacturers' waste that can replace the chemicals which are now purchased at some cost for the work of purification? And may we not expect to find both in sludge and effluent substances that can be recovered and made again of practical use?

The city of Frankfort, in Germany, disposes of its sewage by precipitation and mechanical means, and then discharges the effluent into the river. The sludge is sold as a fertilizer. In Manchester, England, they also resort to precipitation. The works were begun in 1891; but the simplest of these methods appears to be that of the Scotch Disposal Works at Glasgow,¹ put in operation in 1894. Previous to that date they had discharged a vast amount of sewage and waste into the river Clyde, which had come to be a gigantic sewer, and in summer-time gave forth a horrible stench, as I can testify. In 1894, at a cost of \$500,000, they built these works, occupying thirty acres of ground. The sewage is treated immediately it reaches the works with milk of lime and sulphate of alumina. Precipitation takes place rapidly, and then the supernatant fluid is aerated by exposure to the air in thin sheets. While the precipitate is still wet it is dropped out of the bottoms of the settling-tanks, and, being caught in receivers, is immediately "rammed" by sludge presses into blocks, which are next dropped into freight cars waiting underneath to receive them.

The sludge is then taken to the municipal farm, where it is applied to the ground, and raises fodder for municipal cattle. The comparatively clear effluent is now passed through a coke filter, and whenever the filter gets too filthy the coke is put in the fur-

¹ Glasgow had in 1891 a population of 565,714.

nace of the power-house and is consumed. Finally, the effluent is passed through a sand and gravel filter, and so it reaches the Clyde in an almost perfectly clear condition.

This method has several important advantages over filtration. It requires a comparatively small space, and need not be any nuisance, even if operated in a crowded residential quarter.

It is, in my opinion, more certain to destroy all the disease germs than any filtration plan that is in use.

The principles involved in the precipitation of sewage are as follows: Sewage should be collected and precipitated *when fresh*, before it can undergo material fermentation. Precipitation consists in producing an artificial coagulation of the sewage, which carries down with it all solid matter, and therefore vegetable germs. Then the supernatant liquid must be oxygenated either by exposure to the air, to water, or to some powerful oxidizing influence—such, for example, as electricity; and oxygen can be made to destroy any remaining organic life, if such be present. As a rule, the effluent should not be turned into any running stream until its bulk is at least twenty times that of the effluent, and the chemical qualities of the water should be such as not to precipitate the effluent; so that whenever a town can reach a stream whose volume is at least twenty times that of the effluent, the problem is solved except as to details.

From all that has been said, it appears that the choice of methods lies between filtration and precipitation; while the discharge of crude sewage is a plan that is gradually being abandoned, and is only applicable in very exceptional instances. The choice between filtration and precipitation will be made in the light of the advantages and disadvantages that have been named. Where, as in the case of Berlin and Paris, a city has a large amount of spare land that can be reclaimed by sewage treatment or made a source of revenue, the conditions are favorable for filtration. When there is no available space or waste land, and the population is dense both in and about a city or town, precipitation appears advisable. Looking at the question from the point of view of economy and from the figures in the English reports, which are most elaborate, precipitation appears to be the cheapest, and at the same time its future has the widest possibilities. Occasionally the reports make it the most expensive plan. Certainly it might easily be so if used in connection with the combined

system of sewage. To be considered in estimating the cost of a system are: (1) The amount of interest to be paid on the loan for constructing the original plant; (2) the annual operating expenses; (3) the annual cost of maintenance and repairs; (4) any profit that may accrue. But, as I have said, such provisional estimates must be very carefully considered, for they are apt to be misleading. Communities in this country intending to construct any of these systems cannot be too strongly recommended to give the matter their most thoughtful attention, and with special reference to the requirements of their particular locality.

Fortunately there is a growing tendency nowadays to throw the chief burden of the committee, commission, or board appointed for this purpose, on the medical profession. And this is eminently wise. Medical men are, by their education, training, and experience, well equipped for this work; and usually willing to serve for a fair remuneration; and are disposed to rise above the level of partisan politics, and aim to secure efficiency and economy in public schemes of this kind. But other elements are necessary. There are questions that need the common-sense and experience of the practical man of business, who has been successful in his enterprises; while, finally, legal training is important in removing some of the difficulties that are sure to come to the front. Corporations are quite apt to demand more than their rights, and the rights of individuals may be trampled on. Corporations have rights, however, that must be respected; but at the same time the rights of the individual must be maintained. But the three personal elements named should be in control in these matters, whether on commissions or local or State boards of health. Engineers, chemists, and biologists and other specialists have their necessary places, but they are subordinate ones, and their functions should be advisory. A study of our recent progress in sanitary science will demonstrate that along these lines the most satisfactory progress has been made—while neglect of them has often led to disastrous results.

XXXII. DRINKING-WATER AND DISEASE.

BY WILLIAM P. MASON, M.D.,

TROY.

ABSTRACT.

IN that excellent treatise upon *Water-supplies and Inland Waters*, issued by the Massachusetts State Board of Health, waters are classified as "normal" and "polluted," the former being such as are free from addition, directly or indirectly, of either sewage or industrial waste.

The relation of "normal" waters, as a class, to sanitary science constitutes a subject by itself, and one shrouded in much confessed ignorance and conflicting testimony, as is instanced by the doubt we entertain of the effect of "peaty water" upon the human organism.

It would be going much beyond the proper limits of this paper to ask your attention to a recital of the various views concerning this topic, or to quotations of cases showing the question to be yet in a very unsettled state. Suffice it to say that it has been the author's fortune to meet with but few cases of illness traceable to peaty waters, and in all such instances the patients suffered from a mild and transient form of diarrhoea caused by water from a low-lying, shallow lake or pond, surrounded by low, wooded banks.

When we dwell upon the fact that the milder enteric disorders rarely get into the "death-rate," and that visiting strangers may suffer from a cause to which the acclimated natives are not susceptible, we appreciate that such data as Tidy furnishes do but emphasize what we believe to be a fact, that in dealing with peaty water we must consider it as largely an unknown quantity, possibly entirely harmless, but also the possible centre of much trouble, especially if the amount of organic matter present be large.

Concerning the hardness of a water and its relation to public health, the English authorities conclude that: "Where the chief sanitary conditions prevail with tolerable uniformity, the rate of mortality is practically uninfluenced by the softness or hardness of the water." This conclusion is based upon carefully analyzed

statistics derived from eighty-four towns using soft, moderately hard, and very hard waters.

Turbidity is exceedingly common in the river-waters of this country, particularly in those of the great central basin. With reference to the influence of the suspended mineral matter upon health, we find some conflict of opinion. In reply to the claim so often advanced that turbidity is a positive advantage, as tending to remove objectionable material from a sewage-polluted river-water, it should be stated that suitable arrangements for sedimentation must be furnished, otherwise no advantage can be expected from the mere presence of the suspended mineral ingredients. It is a well-known fact that precipitating solids will drag down with them other finely divided substances which, if left to themselves, would require long periods of time for complete sedimentation, and that even soluble salts will often be in part carried down by the same cause, as every student of quantitative analysis knows to his sorrow. It may readily be conceived that, acting in obedience to this principle, the depositing silt would gather to itself, and carry with it, many germs of disease which, if left to themselves in clear water, would require much longer time to fall; but that there is any advantage to be looked for in using a turbid water without sedimentation, and thereby swallowing turbidity, germs, and all, is scarcely rational.

The really serious item of contamination, the one to which the sanitarian's attention is most quickly drawn, is that of sewage introduction, and a consideration of the questions arising upon this topic dwarfs all others into comparative insignificance. Shall a water once polluted with sewage-material be again used for human consumption? If there be danger in such use, what is its nature, what is its extent, and are there available means for averting it? These are popular questions of the day with which the sanitarian has to grapple.

That polluted public water-supplies have caused widespread illness and death is established beyond a peradventure, and, from among the many illustrations that might be cited, the author offers the following in evidence:

In the autumn of 1887 the city of Messina, Sicily, was visited by an epidemic of cholera. The plague lasted from September 10th to October 25th, during which time there were some 5000 cases and 2200 deaths. Although for a time the daily number of

cases was excessive, running as high as 400, the ordinary number was about 70. The population was stampeded, falling from 71,000 to about 25,000. The government felt that a very possible cause for the rapid spread of the scourge lay in a contaminated drinking-water, and an inquiry, resulting in a development of the following facts, fully confirmed the suspicion: The water as it left the gathering grounds in the mountains was of excellent quality, but it was conveyed to the city in a conduit entirely open. Those who are familiar with European customs will remember that the washing of soiled clothing is there largely an out-of-door occupation, conducted in the nearest available water-course. For the benefit of the Messina washerwomen a portion of the public water was deflected, before reaching the walls, and turned into neighboring washing-pools of stone. A fair proportion of this deflected water, after having been used for laundry purposes, found its way back into the channel, and continued its course to the city. Further contamination occurred within the town itself, for the reason that the mains of the distributing system were of unglazed tile, badly joined, and were laid in the immediate vicinity of unglazed tile sewers, also very leaky. The sewers were at times found on top of, and parallel with, the water-mains.

Acting upon its conviction as to the cause of the great mortality, the government sent tank ships to the mainland, filled them with pure "Serino" water, supplied the people therewith, and the daily number of cholera cases immediately fell from seventy to five; or, to quote an expression of the time, "the plague ceased as if by magic." An entirely new and efficient distributive system has since been introduced, the open conduit has been replaced by modern pipe, and the city has escaped further visitation by cholera.

While in England the writer had opportunity to study the violent outbreaks of typhoid fever which occurred in the valley of the Tees River. Most of the towns of the valley take their water-supplies from the river, but a large scattered population receives water from other sources. The estimated population using Tees water at the time of the outbreak was 219,435, and the number not using such water was 2,848,181.

In many places, especially in the towns, the river receives all sorts of polluting additions, which are carried on by the current to the intakes below. During dry weather the stream recedes considerably, leaving uncovered its rocky foreshores, which accumu-

late filth of every variety, and retain the same until, by reason of heavy rain, the river suddenly rises and sweeps the refuse downward toward the towns nearer the sea.

The result produced upon the thoughtless public, of such an extra and concentrated dose of sewage material added to their water-supply, is best shown graphically by chart, where it will be observed that increase of rainfall is followed by increase in cases of typhoid fever among the persons using the Tees water, after an interval corresponding to the incubation period of the disease, while no appreciable result is noticed among the people of the same district using other sources of supply.

When it is remembered that much of the Chicago sewage flows into Lake Michigan, and that until recently the intakes supplying the city with the lake-water were situated only a few hundred feet off shore, a comparison of the typhoid death-rates before and after the driving of the four-mile tunnel is suggestive. The tunnel was opened December 3, 1892.

	Year ending	
	Sept. 30, 1891.	Sept. 30, 1892.
Deaths in Chicago from typhoid fever . .	1790	712
Per cent. of typhoid deaths to total deaths . .	6.72	2.64

Improvement in the typhoid death-rate, coincident with a bettering of the water-supply, is exhibited in the Boston statistics, which show a lowering of mortality from 17.4 per 10,000 in 1846 to 3.2 in 1890.

In the State of Connecticut the typhoid statistics for the past thirty-five years show a continual improvement, which must be due, at least in part, to abolition of old private wells for new and better water-supply. The percentage of deaths (for the entire State) from typhoid to total deaths from known causes has fallen from 4.99 in 1855 to 1.84 in 1893.

It will be remembered that Sternberg, referring to the "comma bacillus," says: "The most satisfactory evidence that this spirillum is able to produce cholera in man is afforded by an accidental infection which occurred in Berlin, in the case of a young man who was one of the attendants at the Imperial Board of Health when cholera cultures were being made for the instruction of students."

An entirely similar case came under the writer's observation in Paris while attending the course at the Pasteur Institute. One

of the students, an Italian, was in the habit of constantly smoking cigarettes while at work. He became inoculated with Asiatic cholera through laying down his cigarette in contact with a cholera preparation. He took the typical disease and recovered. A friend of the author reports a like instance of infection, observed by him while a student in Koch's laboratory.

The maintenance of the water-supply in a pure state is not of itself enough to eliminate typhoid fever. The local hygienic conditions must be good as well, otherwise the resisting powers of the human organism will be lowered and left unable to oppose the invading germs, which may come from some other source.

In recent work by Sanarelli, conducted at the Pasteur Institute, Paris, this point is well covered. He shows that if animals are previously injected with the toxins of certain bacteria, such as *coli communis*, *prodigiosus*, and the like, they afterward succumbed to inoculation with Eberth bacillus with complete symptoms of typhoid.

Unfinished experiments point toward the same results being obtained when the animals are inoculated with typhoid culture, after they have been compelled to breathe air laden with putrefactive materials for a certain time. These results are very suggestive, and bear directly upon the relation of unsanitary surroundings and development of typhoid. From both experiment and experience we are forced to conclude that "good water" and "clean surroundings" go hand-in-hand in protecting the people against typhoid fever and cholera.

Perhaps the most exhaustive examination of the relation of the height of ground-water to the prevalence of typhoid that has been made in America is to be found in the work of the State Board of Health of Michigan. Observations have been made by that board during a period of many years, and the results indicate in a very marked manner that increase of typhoid and lowness of water in wells move in practically the same curve of variation.

We do not possess in New York so complete records as to the condition of the ground-water as they have in Michigan; but the rainfall, upon which ground-water depends, is on record, and the reports show that more than the average amount of rain fell in New York during the autumn of 1894, following, as it did, an exceedingly dry summer. If typhoid fever bear relation to sudden rise in level of ground-water, as has been held, rather than to the

prolonged low state of such level, as is taught in Michigan, then surely the autumn of 1894 was a very favorable time for a marked outbreak of the disease in the State of New York, but no such condition is reported by the sanitary authorities.

New York does not stand alone in its failure to accord with the Michigan rule, as is seen from the statistics of Connecticut and Massachusetts.

The Western States, so far as heard from, appear to follow, as a class, what has been styled the "Michigan rule." Now, what reasonable explanation can be given for the failure of New York, Connecticut, and Massachusetts to accord with the rule?

While not wishing to dogmatize upon manifestly scanty data, the suggestion is offered that, so far as these States are concerned, larger shares of their populations derive their drinking-water from more or less carefully selected sources of public supply, and are consequently less exposed to danger from the local contamination of private wells.

Finally, in view of the intensely practical spirit of the age, let us consider the question, Does pure water pay?

To abandon an existing water-supply system, or to purify the polluted water that it furnishes, always involves the outlay of much money, and the city taxpayer has the right to inquire whether or not the benefit derived is a fair equivalent for the cash expended. Impure water affects the yearly death-rate, as a whole, much less than that section of it which deals with diseases recognized as "water-borne," prominent among which is typhoid fever. No better measure can be selected of the wholesomeness of a city supply than that furnished by a list of the annual cases of this serious disease.

Typhoid fever is doubtless, to a very large extent, a preventable disease, but the means of prevention, in the shape of great public works, are expensive, and again the question is asked, Do these works pay? Can we afford to save the typhoid victims?

According to Rochard, the economic value of an individual "is what he has cost his family, the community, or the State for his living, development, and education. It is the loan which the individual has made from the social capital in order to reach the age when he can restore it by his labor." The statement of this value, in form of money, is a difficult matter, which has been variously settled by sundry investigators. Chadwick considers

an English laborer equivalent to a permanent deposit of £200 (say \$980). Farr gives £159 (say \$780) as the average value of each human life in England. A French soldier is rated as worth 6000 francs (say \$1200).

In view of the fact that typhoid fever selects by far the greatest number of its victims among those in the very prime of life, to the relative exclusion of the very young and the very old, it will be reasonable to follow the figure fixed upon by E. F. Smith, and place the loss caused the community by a death from typhoid at \$2000. This will be noticed to be less than half the figure so frequently referred to in the courts of this State for the value of a human life.

For the sake of illustration, let us consider the tax levied annually by typhoid fever upon a city of one hundred thousand inhabitants; for instance, Albany, N.Y. From statistics given in the last five annual reports of the State Board of Health, the deaths due to typhoid fever in Albany average seventy-five for the year. Rating the money-value of each life at the figure given above, this death-rate would mean an annual pecuniary loss to the city of \$150,000. Funeral expenses are variously estimated at from \$20 to \$30. Should we accept the intermediate value of \$25, this item would cause \$1875 to be added to the above sum, thus raising the total direct loss through death to \$151,875.

But typhoid fever does not always kill. Its mortality-rate is commonly quoted at about 10 per cent. For the present purpose, should we assume nine recoveries for each death from the disease, and place forty-three days as the period of convalescence (the average of 500 cases at the Pennsylvania Hospital), we should have a term of 29,025 days as representing the time lost, per year, by the 675 persons who have the fever and recover. Thus an annual loss of over seventy-nine years has to be borne by the city's capital of productive labor. This great amount of enforced idleness, when translated into money value, should very properly be added to the death loss above estimated.

Fixing the rate of wages at \$1 per individual per day—a very low figure, considering that the bulk of typhoid patients are in the very prime of life—there is a loss of \$43 of wages for each recovery, or a total yearly loss for the city from this item of \$29,025. The cost of nursing and doctors' bills equal at least \$25 per case, which is a very low estimate, thus adding the further amount of

\$16,875 to the gross sum. Expressed in tabular form, this yearly tax imposed by typhoid fever upon the city of Albany is given below, and, upon a most conservative estimate, it is practically \$200,000, which is \$2 a year for each man, woman, and child in the city, or a yearly tax of \$10 for every family of five persons.

75 deaths at \$2000 each	\$150,000
75 funerals at \$25 each	1,875
Wages of 675 convalescents during 43 days at \$1 per day	29,025
Nursing and doctors' bills for 675 convalescents at \$25 each case	16,875
<hr/>	
Total tax levied annually by typhoid fever upon the city of Albany	\$197,775

It can readily be seen that public works which could eliminate a reasonable fraction of this great tax would pay for themselves in the course of a few years, even though they were originally expensive.

Finally, it is right to inquire what fraction of the present typhoid loss it would be reasonable to hope to save if pure water should be served to the city in place of its present polluted supply. To answer this question recourse must be had to statistics obtained from other cities, covering periods before and after better water-systems had been introduced.

Such data have been already given for a number of cities and communities, and it only remains to anticipate what will be later said of Munich, and state that improved water and sewerage have reduced the annual typhoid mortality from an average of 25.4 per 10,000 to 2.7.

Surely pure water pays in a city with such a record, and likewise it would pay in the newer but growing cities on this side of the Atlantic. Americans insist upon being supplied with much more water *per capita* than is usually furnished in Europe, but they are singularly indifferent as to its quality. It would be a reform of great moment if they could be induced to curtail the present enormous waste of public water, such as that of Buffalo, for instance, which is stated to be 70 per cent. of the entire pumpage, and to expend the money thus permitted to leak away in a vigorous effort to improve the quality of the supply. No such lowering of the typhoid death-rate as occurred at Munich, San Remo, and sundry other places could be looked for, perhaps, but

a large percentage of the present rate could be cut off, and, we think, from a consideration of the above figures, that such a reduction would pay.

No weight should be attached to the argument, so often advanced by the individual householder, that he and his family "have used the water without evil result for fifty years." A single family is too small a collection of units upon which to base any estimate touching the question at issue. Placing the typhoid death-rate for Albany, as above, at seventy-five annually, it would call for one death in a family of five persons every 261 years, a period much beyond the limits of ordinary family record.

DISCUSSION.

DR. LEWIS S. PILCHER, of Brooklyn: No subject can be of more importance than the water-supply of a community. There has just been submitted to the Committee on Hygiene of this Society from the Committee on Public Health of the State Legislature a proposition for its consideration which involves this subject more or less. The bill proposes to prohibit absolutely, without any restrictions whatever, the cutting of ice from any river. The first clause of the act reads: "Hereafter no person or persons shall cut from any river ice to be used in any part of the State, for family or domestic purposes, nor shall any such ice so taken or cut from any river be sold, offered for sale, or given away for family use." The Committee on Public Health of the Legislature wishes the advice of this Society as to whether river ice is necessarily unhealthy. The possibilities of self-purification of running water is well known. In our judgment the cutting of ice from rivers under such restrictions as may be imposed by the health authorities of any district would be proper.

DR. A. JACOBI, of New York: If I mistake not, the reader of the paper represented Pettenkoffer as holding that typhoid fever is the result of rising water. I feel positive that the contrary is Pettenkoffer's view, that typhoid fever follows the sinking of surface water. Regarding the self-purification of rivers, referred to by Dr. Pilcher, this is very considerable, and there is certainly less danger from impurities in river water and river ice than many believe who think only of the impurity of water as it passes large cities. Consider the way in which ice is formed; floating matter in water tends to sink to the ground as it freezes, and ice is not formed at the bottom, but at the top. I believe that the notion regarding the dangers of river ice is much exaggerated, and we ought to be very careful about recommending any plan which will exclude all river ice from use by the people.

DR. G. V. R. MERRILL, of Elmira: During the fall there was little flow of water in the river at Elmira and there was little typhoid fever. About four weeks ago the river rose, and within two weeks there were forty cases of typhoid fever, and since that time there have been six or more cases daily. We had trusted in the doctrine of self-purification of river-water, but the water was examined by three bacteriologists in different cities, and each reported that it contained the typhoid bacillus. Now, before the water fell after that rise ice formed and was cut for consumption during the coming summer. I leave it for your consideration whether there is not a probability that the typhoid bacillus will remain in that ice and make it dangerous for use.

DR. H. S. DRAYTON, of New York: As an instance illustrating the vagaries of hygiene, I have examined the water of the Passaic River where it is taken for use by Jersey City, and can assure you that I have never seen a worse product to be used as a beverage. It is very singular that the past two years, when the water was low, there were very few cases of typhoid fever. I mention the fact simply as an anomaly, and not as in any way militating against the views presented by Dr. Mason.

DR. ALBERT VANDER VEER, of Albany: It seems to me that as a Society we ought to be exceedingly careful about taking action which would exclude cutting ice from rivers in this State. It is a question whether it would not lead to turning the whole ice business over to the manufacturers of artificial ice. In the great city of New York, which is supplied with ice chiefly from this "villainous" Hudson River, the percentage of typhoid fever to the population is quite small.

DR. MASON: Pettenkoffer's notion with regard to typhoid fever is that as the autumnal rains sink into the ground they drive the air with the impurities arising from putrefactive material out into cellars, etc. But Michigan observers find that it is not true that typhoid fever follows a rise of ground-water, but that it follows a prolonged low stage of ground-water. I believe that view is correct so far as can be determined by the statistics at hand.

There is no question that ice is purer than the water from which it is frozen, unless it be artificial ice, where the whole depth of water is frozen. But purification by freezing is by no means absolute, as I have had abundant opportunity to see. With regard to the State restricting the cutting of ice from certain places, I think it would be most excellent. But the prohibiting of the removal of ice from all the rivers of the State would be a serious matter. One habit which ice people have is that of cutting holes into the ice and letting the water overflow it and freeze from above. Ice so formed is not purified.

XXXIII. SHALL THE STATE UNDERTAKE TO RESTRICT THE SPREAD OF TUBERCULOSIS?

BY JOHN L. HEFFRON, A.M., M.D.,
SYRACUSE.

MR. PRESIDENT AND MEMBERS OF THE STATE MEDICAL SOCIETY: Fourteen years have passed since Koch announced the discovery that a specific bacillus is the primary cause of tuberculosis, and demonstrated that the disease could be reproduced in susceptible animals. To many careful students who had observed accurately the history of the disease, this announcement came, not as a matter of surprise, but as a confirmation of theoretical conjecture based on strong reasoning and experimental work with tubercular tissue.

These received gladly Koch's communications on the subject, and in their laboratories duplicated his methods, reproduced his results, and confirmed the correctness of his deductions. In a short period of time the objection that the characteristic bacillus, admittedly found in all tubercular tissue and in their discharges, was not the cause of the disease, but the incidental accompaniment of it, was silenced by the contemporaneous evidence of experimental observers of all nations.

In a similar way the infectious nature of the virus has been established beyond a peradventure, so that it was long ago proven that tuberculosis is reproduced in susceptible subjects, not only by experimental inoculations, but as readily by the autoinoculation of an unprotected surface, by unsought contact with matter containing the specific germ.

The investigations of the dust of consumptives' wards in hospitals, of houses in which tubercular patients have dwelt, of churches, theatres, schools, and public conveyances which had been frequented and contaminated by those having tuberculosis, have established the fact that the process of drying does not kill the germs, and that after lying dormant for months they are capable of active reproduction and of initiating the disease of which they are the cause.

In the investigation of food supplies from tubercular animals the

same results have been attained, and have been so thoroughly established that our State, and many another, is now prosecuting a crusade against the tubercular domestic animals for the protection of mankind from this one source of infection.

All these facts have been known to the profession for many years, and for as many years there has been no one to raise a voice against them. Indeed, the younger physicians have been so educated that to them any other possible cause for consumption or for its distribution is known only as a matter of ancient history. When we search for results springing from this discovery commensurate with its greatness, we are met with disappointment and surprise.

By State control, leprosy has been banished from civilized nations; smallpox has been robbed of its sting of death; scarlet fever and diphtheria have been limited in their spread; but tuberculosis, with its multifold manifestations, still claims one-quarter of all the deaths for its own. From the forthcoming report for the year 1895, Dr. Smelzer, the Secretary of the New York State Board of Health, has kindly furnished these statements:

“The total reported deaths from consumption in our State for 1895 is 13,330. The average reported deaths for the past ten years is 12,616.” That these statements do not indicate in full the actual deaths from tubercular diseases we all know perfectly well, so that these figures, as appalling as they are, in order to represent the true conditions, must be materially augmented. That such an annual sacrifice of life on the altar of tuberculosis is necessary, not one of us believes.

Modern science teaches that tuberculosis is rarely hereditary—almost always communicated—and, if not preventable, at least capable of very great restriction. These ideas are prevalent the world over, and in the most enlightened communities are receiving attention. Our own State Board of Health, though behind others in this respect, has not been unmindful of the importance of this subject. In November, 1894, it formulated a circular letter to be sent to the health officers of the State, setting forth the facts here briefly mentioned, requested the co-operation of physicians in reporting cases of tuberculosis, and suggested that it might be wise to distribute to those families in which tuberculosis exists information as to how the disease is communicated and what precautions should be observed. Such action is but preliminary, and is not

sufficient. Any action on the part of the State Board of Health must have the hearty co-operation of the great body of intelligent physicians, whose representatives are here assembled, and any action to be efficient must be mandatory—not advisory.

From the absolute knowledge in our possession that the infectious material in tuberculosis resides wholly in the secretions from the part affected, it seems possible to restrict the propagation of the disease with more certainty and with less inconvenience to the afflicted and their friends than in any other infectious disease.

To secure such restriction, a campaign of education of the people must be inaugurated. The people must be taught the nature of this disease, the methods of its propagation, and the means that must be employed to control it. For this purpose, perhaps, no plan that has been proposed is superior to that which has been adopted by the State Board of Health of Michigan, and which, in other diseases, has proved to be of such absolute value for the past twenty years. By this plan it is mandatory upon every physician to report to the local health board every case of tuberculosis. To each patient, and to his friends, and to those who come in contact with him, is sent a circular of information setting forth in simple terms all of the facts concerning the nature, communicability, and necessary preventive measures to be observed to protect himself and his friends from the further spread of the disease.

To secure a universal dissemination of accurate information concerning zymotic diseases the State of Michigan has within the last year made it obligatory to teach all pupils in the public schools the fundamental facts and practical methods of sanitation in all known infectious diseases. In a reply to a letter of inquiry concerning the practical workings of the methods so far adopted, Dr. Baker, Secretary of the State Board of Health of Michigan, says: "Though it is too early to show by statistics the result of this plan, it is noticeable that many people have been set to thinking on this subject and much interest has been manifested." In one of his able addresses on "Consumption as a Disease Dangerous to Mankind," he states facts "which seem to warrant the hope that the restriction of consumption will prove easier than the restriction of scarlet fever," and on a previous page he has proved by statistics that since the adoption of this plan in 1874 "the death-rate from scarlet fever in Michigan was much less than one-half what it had been previous to the beginning of the work."

The campaign of education involves more than the necessary instruction directed to the patient and to his immediate friends, and more than the instruction of the children of this generation. It must extend to all municipalities, to all organizations possessing public halls, to all public passenger carriers, to all architects. A person recently returned from Colorado said: "The streets are fairly slippery from the expectorations of consumptives who are there for their health." We have known a previously healthy person to return from a visit to Colorado with consumption, a symptom of which neither he nor any of his family ever before presented. Dr. Gihon, the late Medical Director of the United States Navy, said that he was never in such constant fear for his life, not even in the midst of an epidemic of yellow fever, as he was on a journey from New York to Florida by steamer in a throng of expectorating consumptives going south for their health. Public buildings must be treated as infected places, and cared for as such. Heating and ventilation of such halls should be carried out so as to minimize the possibility of inhalations of dried sputum. Public carriers, like street cars and steamers and railroad coaches, must be induced to prevent expectoration upon the floor; and such a course is very easy of accomplishment and far more important to the comfort of the passengers than the regulation of smoking. It is to the credit of some street-car companies in certain cities that a prominently placed placard announces that "Spitting on the floor is not allowed." The inculcation of such instruction widely disseminated will make unnecessary the methods employed in some German cities of placing at convenient intervals on the streets of public cuspidors with their unsightly contents. Everyone should be taught to protect the public from the discharges from his mouth, as he has been taught from his infancy to control the excretions.

That there are difficulties in the way of attaining perfect control of those having tubercular discharges is self-evident. It is to the very fact that the difficulties are so great that the apathy of the profession is to be charged. It may be well to review some of the difficulties that must be surmounted.

First of all, what have we, as physicians, to overcome in our own ranks? We are the descendants of our fathers, and have inherited a dislike to tell disagreeable truths. In earlier days to tell a person he had tuberculosis or consumption was equivalent to pronouncing a death sentence. We are not yet free from this

thraldom, though we know perfectly well that modern statistics can show a recovery of 50 per cent. of cases detected early. A competent physical examination is often not insisted upon. A bacteriological examination of sputum, in those early cases where little but malaise is complained of, and where physical exploration fails to reveal the first beginnings of the disease process, is very frequently neglected. Often when the symptoms are unmistakable, even to the friends, the doctor yields to the importunities of the family and makes them comfortable by an off-hand diagnosis of "bronchial trouble," and omits all hints of danger to anyone else. Many object to reporting cases of tuberculosis on the ground that they are unwilling to brand a man as a consumptive, and thus blight his life in the community in which he lives. Thus, in our own ranks, we must overcome errors that are directly traceable to carelessness and sentimentality.

Among the people there is little to overcome save pardonable ignorance. Consumption is so very common that the people feel at home with it. It is considered a terrible affliction, but one so often observed that familiarity with it has bred more than pity.

The intelligent people need but this specific education. They need but to know that this fell destroyer is capable of control, and the assurance that in its control the loved victim need suffer no curtailment of his inherent rights, no diminution of their tender care, and that in a careful observation of sanitary regulations he is not only protecting them, but is, by so much, making his own cure the more possible.

With the ignorant poor, the wilfully careless, and the vicious, the case is not so simple. Because of the greater difficulty in educating these classes, it is a question if it would not be wise at the start to empower health boards to isolate, in specially adapted hospitals, such as will not or cannot conform to the regulations for home care. That certainly will come in time, for as soon as a public sentiment in favor of the restriction of infectious diseases is firmly established, just so soon will the people force those put in charge of the public health to compel an observance of sanitary laws on the part of the wilful and ignorant.

If we are profoundly convinced of the possibility of restricting the ravages of this scourge of mankind, shall we escape deserved censure for not making a vigorous effort because there are difficulties in the way? No timid, half-hearted, apologetic, and advi-

sory action will ever win the co-operation of the profession and the respect of the people. But if the plain facts are vigorously stated, that tuberculosis is a curable disease, a contagious disease, and a preventable disease, and that with the co-operation of the people of the State, everyone of whom is vitally interested, the number of cases can be diminished 50 per cent. in ten years—as is firmly believed, I predict that we should have such strong support from the more intelligent of our citizens that the ignorant and the vicious would be speedily compelled to conform to the prescribed sanitary regulations.

To summarize, the following conclusions may be drawn:

1. Tuberculosis is an infectious and curable disease, capable of restriction.
2. That the State should compel the registration of every case of tubercular disease.
3. That circulars of information as to the nature, communicability, and sanitary care of all tubercular disease should be sent to those afflicted with the disease, and to those attending them.
4. That instruction as to the nature of contagious and infectious diseases, and the practical methods for their control, should be given to all senior pupils in public grammar schools.
5. That all owners and trustees of places of public entertainment, including churches and schools, and all public carriers, should be required to prevent contamination of their halls and conveyances, and to disinfect them.
6. That the hopelessly ignorant, wilfully careless, and vicious afflicted with tuberculosis should be isolated in special hospitals provided for by the State.

DISCUSSION.

DR. A. JACOBI, of New York: We are opposed in this country to anything like centralization, but we have learned that, after all, centralization is required wherever great objects are to be accomplished. It is impossible, therefore, not to coincide with the conclusions of the reader of the paper. We ought not to forget, the State ought not to forget, that we owe the same protection to all the rest of the individuals of a community that we owe to the one who is diseased. I am certainly of opinion that there is a very strong obligation on the part of the State in relation to tuberculosis. As far as certain other infectious and contagious diseases are concerned, we are used already to boards

of health interfering with what has been called personal liberty. If there is an obligation on the part of the State to protect you against diphtheria, certainly it has a right and a duty to protect you against tuberculosis as well. Let us not forget that we have at least two million sick with tuberculosis in the United States. We ought also to be well aware of the fact that in a well-regulated sanitarium at least 13 per cent. of all those sick with tuberculosis recover unless they are in the last stage when they enter. It is a statistical fact, verified in many European countries, that of all those who appear to be absolutely unfit for work, 28 per cent. can be restored so that they can return to work. Insurance companies have taken the matter up in Germany and in Austria, and send their insured who become tuberculous to a sanitarium, that they may be restored, for it is cheaper than to let them die and have to pay the policy. What is economy for insurance companies ought to be economy for the State.

DR. E. F. BRUSH, of Mount Vernon: I think the medical profession is doing some harm in associating a disease like tuberculosis with scarlet fever, diphtheria, and that class of contagious diseases. We all know that in these there is a distinct period of incubation, and exposure to the contagion is followed quickly by the disease. We all know that tuberculosis is a contagious disease, but the disease may not develop for years after exposure. A few years ago I studied into the habits of the people all over the globe, and I discovered the fact—and it has not been successfully disputed up to to-day—that the only people who enjoy immunity from tuberculosis are those who do not domesticate the cow. Yet one can drink the milk of a cow which dies of tuberculosis and not develop the disease. Until I began the study of bovine tuberculosis the normal temperature of the cow had not been stated in any of the text-books. It is 102° F., and the temperature of a person when he develops tuberculosis in an active form is 102°. The deduction is obvious, that when a person has a temperature of 102°, and there is nothing special to prevent the development of tuberculosis, the germ will grow if it is present. I believe it is wrong to teach that all tuberculosis comes from expectoration in dirty halls, etc., and that tuberculosis is contagious in the same sense as scarlet fever and diphtheria. I believe authorities are coming to recognize the fact that it is the domesticated cow which is most dangerous, and the State would do well to appropriate money to stamp out tuberculosis in dairy cattle.

XXXIV. SERUM-THERAPY.

By E. H. WILSON M.D.,

BROOKLYN.

IF the developments of the past few years can be taken as a criterion, it would seem that there are at present presenting themselves possibilities in the line of rational therapeutics which were not dreamed of ten years ago. The results thus far attained in the progress of serum-therapy are not accidental discoveries, but are the outcome of laborious work, patient investigation, and careful observation, and are, as far as laboratory experimentation goes, facts which are capable of demonstration with a mathematical degree of accuracy. They are the natural outcome of the study of acquired and induced immunity, and, as far as their practical application goes, only applicable to those diseases which are caused by a specific organism, and especially to those which, like tetanus and diphtheria, produce their characteristic symptoms by intoxication rather than by infection.

It would be impossible in this short paper to go into the study of immunity which led up to these discoveries, and we will have to content ourselves with a consideration of the serum-therapy of the different diseases as it has developed up to the present time.

The first announcement in this line was made in 1890 by the Japanese bacteriologists, Ogata and Jasuhara; they reported that animals susceptible to anthrax were rendered immune or were cured after infection by the injection of the blood-serum of animals naturally immune, such as the frog or the dog. These results have not, however, been confirmed by other observers until very lately. The experiments of Pawlosky and Buchstab (1893) and of Dedoroff are favorable to the view that there exists in the serum of immune individuals (animals or man) rendered immune against cholera, a substance which might be useful in the treatment of that disease, if it could be obtained in sufficient concentration or quantities. Most of the experiments with cholera, however, have been in the direction of protective inoculations, and have been published by Haffkine, Hilenperer, Pfeiffer, Sawtschenko, and Sabolotmy. The serum-therapy of diphtheria has been subjected to an extensive practical test both in this country and

abroad, and as the months go by and the statistics accumulate it must become evident to all that with care and discrimination in selecting only cases of diphtheria, in using the serum early in the disease, and in using the full prescribed dose, that the mortality from this disease has been lowered to a degree which could not be attributed to anything else than the use of the serum.

At the Imperial Health Office in Berlin there were received for the second quarter of 1895, 2130 returns from the use of antitoxin. In 1278 cases the diagnosis had been confirmed bacteriologically. Out of the total number 1812, or 85.1 per cent., recovered, and 306, or 14.3 per cent., died. If all the cases which died within twelve hours of the beginning of the treatment could be eliminated, the mortality would be reduced to 13.3 per cent.

In 1883 the mortality was 28.9 per cent.; 1884, 25.2 per cent.; 1885, 23.4 per cent.; 1886, 24.5 per cent.; 1887, 23.7 per cent.; 1888, 26.0 per cent.; 1889, 25.4 per cent.; 1890, 28.6 per cent.; 1891, 27.1 per cent.; 1892, 29.6 per cent.; 1893, 30.1 per cent.

In the first quarter of 1895 the mortality was 17.3 per cent. In the second quarter of 1895 the mortality was 14.4 per cent. For the first half of 1895, 15.9 per cent.

In the cases where the injection was made on the first or second day of the disease the mortality was 6.4 per cent. In the city of Brooklyn antidiphtheritic serum has been prepared by the Health Department and issued free of cost to physicians applying for it. The returns both from private practice and hospital cases show a mortality of about 14 per cent. in the former and 14.5 per cent. in the latter. The actual figures will shortly be published.

The Klemperers, Emmerich, and Foà have published numerous experiments on the serum-therapy of pneumonia. They succeeded by intravenous injection of the serum of immunized rabbits in curing other rabbits as late as twenty-four hours after injection with many times a fatal dose of a virulent culture of the micrococcus of croupous pneumonia. Some experiments have been made in using this serum in cases of pneumonia in man, but further observation is needed to confirm its value, although Emmerich says "the active substance in the serum will sometimes prove to have an ideal curative power for man."

In the spring of 1892 the writer assisted Dr. Sternberg in some experiments which demonstrated the fact that the blood-serum of an animal immune from vaccine or a human being immune from

smallpox, by having recently had it, contained some substance which neutralized vaccina. The blood-serum from vaccine immune calves and smallpox convalescents was used to inoculate children who had never been vaccinated, at the same time an inoculation with good, fresh vaccine virus was used on the other arm. The result was uniformly the same, the vaccine virus did not "take." At the same time control-vaccinations made with the same virus produced typical vaccine pustules.

The same effect of neutralization could be obtained by exposing fresh vaccine virus to the action of the serum in a water-bath at a fixed temperature for an hour. This peculiarity of the serum suggested the possibility of its being used in the treatment of smallpox. This serum is kept constantly on hand now in Brooklyn, and several cases have been treated with it with very encouraging results (*Brooklyn Medical Journal*, July, 1895). Sixty or seventy bottles were sent to Glasgow at the request of the health officer, and they also report encouraging results. Other publications in regard to the serum-therapy of smallpox have been made by Sternberg, Kinyoun, Landenman, Reute, and Enoch.

Much work is now being done in immunizing animals against streptococcus infection and utilizing the serum in the treatment of erysipelas and puerperal fever. The greatest difficulty in the way seems to be in maintaining the virulence of the cultures of the streptococcus. A mixture of human blood-serum and beef bouillon answers very well, as does also a mixture of ascitic or pleuritic fluid and bouillon, or a mixture of the blood-serum of the horse, mule, or ass and bouillon.

It is best, no matter what media is used, to pass the streptococcus through rabbits at frequent intervals to keep up its virulence. The streptococcus pyogenes, streptococcus erysipelatis, streptococcus longus, streptococcus brevis, and streptococcus conglomeratus are, for this purpose, considered identical. In standardizing the serum of the immunized animal, preferably the horse or the ass, it is necessary to inject the serum six hours after infection with a culture. The culture should be vaccinated (*i.e.*, rubbed into the surface) and not injected. In a recent French publication mention is made of 306 cases of erysipelas treated with the serum with a mortality of 1.63 per cent., the previous mortality having been 5.12 per cent. This serum contained 7000 immunity units, and the dose was 10 to 20 c.c. Erythema and

high temperatures or urticaria-like eruptions were seldom observed. Sixteen cases of puerperal fever were treated with the same with the following results: 7 cases of pure streptococcus infection recovered; 5 cases of mixed infection, streptococcus, staphylococcus albus and aureus, 2 deaths, 3 recoveries; 3 cases mixed infection, streptococcus and *B. coli communis*, and 1 case of *B. coli* alone, all recovered; 10 cases phlegmonous erysipelas, in all a marked diminution of the swelling of the glands and a lessening of the lymphangitis.

Inasmuch as very many of our cases of diphtheria are mixed infections, and a large proportion of the toxæmia in these cases is due to the presence of the streptococcus pyogenes, this addition to serum-therapy promises much in the treatment of these cases. Beginning with the isolation from tetanus cultures of the ptomaine "tetanine" and the toxalbumin tetano-toxine," the work on tetanus immunity has been continuous, and the literature on this subject is probably more extensive than that on any other pathogenic organism. Kitasato, in 1891, produced immunity in rabbits against tetanus, and in May, 1891, Tizzoni and Catani studied the tetanus antitoxin in the serum of immune animals. Behring, in 1892, published his technique of immunizing horses, and since that time many others have experimented in this direction. Dr. Rudolph Schwarz reported the first success with the use of the tetanus antitoxin in man. Rénon (1892) reported two cases. Baginski reported one. The eleventh successful case reported was by Dr. Gattai, and the twelfth by Lesi in 1893. Others have been reported since. One of the same difficulties in the production of tetanus immunity in animals exists as in the production of immunity against streptococcus infection, namely, the difficulty in keeping up the virulence of the cultures.

There are at present two serious obstacles in the way of the administration of the tetanus antitoxin: one is the quantity necessary for a curative dose, and, unless some way is found of concentrating the power of the serum so as to admit of a reduction in bulk of the injection, it will make its use very difficult; the other and more serious difficulty is that, unlike diphtheria, tetanus is not capable of early diagnosis, but is only recognized by symptoms which are the result of profound intoxication and an indication of considerable progress in the disease.

The matter of preserving serum of any kind for hypodermic use

is one of importance. Assuming that the serum is sterile, that the bottles and corks are also sterile, it is still necessary to add something as a preservative; for this purpose many things have been used: carbolic acid, 0.5 per cent.; trikresol, 0.5 per cent.; chloroform, sodium salicylate, thymol, and camphor. It would seem to the writer that such an agent should be non-poisonous, should not coagulate or render the serum turbid, should be of sufficient antiseptic power, and should, preferably, be insoluble in the serum. Carbolic acid is poisonous, and after a time, in 0.5 per cent. solution, causes turbidity in the serum by forming an albuminoid precipitate. Trikresol is open to the same objections as carbolic acid; chloroform does not make a good agent for this purpose, not being readily miscible with the serum; sodium salicylate, although making a clear solution in the serum, does not possess sufficient antiseptic power. Thymol in crystals makes a very good preservative, but the best, in my opinion, is camphor. Small lumps of camphor are taken in sterile forceps, ignited in the flame, blown out, and dropped into the bottles, which are immediately corked and sealed.

XXXV. THE SYMPTOMS AND DIAGNOSIS OF THE INDIGESTION OF STARCHY FOOD.

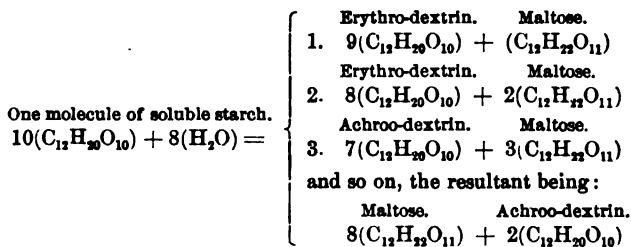
By REYNOLD W. WILCOX, M.D., LL.D.,
NEW YORK.

THERE are many reasons why the text-books are silent upon the subject of this paper. The ease with which the contents of the stomach can be examined, the accuracy with which the effect of pepsin can be estimated, the zeal and energy of the manufacturers of digestive ferments, have placed our knowledge of gastric digestion in a very satisfactory condition. To one who will carefully study the accurate work of Hayem and Winter, and who will follow their teachings, the chemistry and physiology of the gastric fluids are well understood. Yet, after all, the gastric may be stated to be only the preliminary to duodenal digestion. And that gastric digestion is not even essential is shown by observations of Czerny, who demonstrated that a dog could live for five months after his stomach had been removed.

The digestion of starches, it is well known, takes place in the mouth and in the intestine. The older physiologists were of the opinion that the digestion of starches came to an end in the stomach. Kellogg, however, has shown conclusively that starch digestion can go on, under certain conditions, in the stomach. In one hundred and forty-nine cases in which starch digestion was especially studied complete conversion was found in 2 per cent. The conditions under which this is brought about will be considered at a later period.

Starch digestion, according to Brown and Heron, may be represented as follows:

One molecule of gelatinous is converted into n molecules of soluble starch—



We will now consider this digestion as it takes place at the various portions in the alimentary canal.

The term buccal dyspepsia has been used for more than a score of years. It was supposed to be characterized by insufficient nutrition resulting in emaciation, abdominal distention, flatulence, and colicky pains, or abdominal distress, and was due to imperfect conversion of the starches in the mouth. Investigation subsequently showed that this imperfect conversion was but a part, and perhaps a minor part, of the causation, the more important being hasty mastication. The hasty mastication resulted in (1) imperfect breaking up of the starch grains, (2) deficient quantity of saliva, and (3) imperfect insalivation. Since the conversion of insoluble starch into soluble sugar depends upon not only a sufficient amount of saliva, but also upon trituration of the starch grains so that their capsules shall be thoroughly ruptured, and thorough mixture of the saliva with the starch, it can readily be seen how very important is complete mastication. With these three factors in full play, starch conversion is practically instantaneous. Naturally a considerable portion of this form of indi-

gestion, so-called buccal dyspepsia, can be cured by eating more slowly, on the one hand, and by limitation of the starchy foods which are ingested, on the other. This cause of dyspepsia is far more frequent than it is popularly supposed to be, and the neglect to properly appreciate this etiological factor explains some of the failures in therapeutics of those who place great reliance upon the results of the examination of the stomach-contents. The careless hurrying of the carbohydrates into the stomach without their being properly acted upon by the ptyalin of the secretions of the mouth is, as I have said before, a very important cause of dyspepsia. Lees has recently called attention to another prevalent error, which is frequently, I imagine, even encouraged by physicians. Too much amylaceous food is taken into the stomach soaked in tea, coffee, milk, beef-tea, and other fluids. The result of this is that insalivation is not at all performed, and the ptyalin, quite likely deficient in amount from lack of mastication, is present in such a small percentage that it is practically inoperative. The stomach is not expected to originate the digestion of starches; it may and likely does continue the process, when commenced in the mouth, for about half an hour. The natural inference from this is that fluids of any kind should not be used while masticating amylaceous food, and the patient should be restricted from the too free use of tea, soups with vegetables, puddings with milk or cream, or boiled farinaceous foods with the same. The results which are obtained in practice tend to show the correctness of the observation. When we consider that, depending upon the dryness and hardness of the food, from one to three pints of saliva are secreted daily, and that the percentage of ptyalin present (in mixed saliva) is, according to Frerichs, 0.0141, the action of the hydrolytic ferment is by no means insignificant. When, from the causes above mentioned, the amount of carbohydrate food daily ingested and which is necessary for an adult, varying according to Parkes from twelve ounces (at rest) to sixteen or eighteen ounces in laborious occupation (practically about two-thirds of the total food), and this is hurried into the stomach with but little conversion, the results to be expected in the intestines are not far to seek. What the effect of the presence of a large amount of unconverted starch in the stomach may be on gastric digestion is not, so far as I know, determined, nor indeed is it within the scope of this present investigation to inquire.

In the stomach it is admitted that the action of the amylolytic ferment, ptyalin, may continue for about half an hour, its activity being finally checked by the fatty acids, or by the free hydrochloric acid, the latter even in small quantity. On the other hand, it has been stated that when these acids are in organic combination they may favor starch conversion. Recognizing the amylolytic changes by means of the iodine-iodide test (Lugol's solution: starch, blue coloration; erythro-dextrin, red or purple; achroo-dextrin, brownish; the sugar, maltose, or glucose, being detected by Fehling's solution) Kellogg found in the series of cases above mentioned that the purple color of erythro-dextrin was detected in 67.8 per cent., and the brown color of achroo-dextrin in 17.4 per cent. The conditions under which this unusual digestion takes place are pronounced hypopepsia, or, to be more accurate, hypopepsia with hypo-acidity. In fact, the state of starch digestion may be a very good index of the degree of total acidity. When Lugol's solution gives a brown coloration or no reaction whatever, complete conversion of starch has taken place, and the presence of sugar can be confirmed by the strong reaction given by Fehling's solution. A suggestion may be entertained that the prompt conversion of the starch into sugar, which takes place under these conditions, may result in the rapid absorption of the digested starch, so that the conditions are less favorable for the development of acid fermentation than in the presence of a large quantity of unconverted starch. With this observation by Kellogg, I leave the subject of starch conversion in the stomach.

The digestion of starches is resumed in the small intestine. Owing to the inherent difficulties of the subject, the various processes have not been so thoroughly worked out. As a matter of fact, buccal and gastric digestion are merely preparatory to the intestinal. In addition, here proteids and fats as well as starches are digested, and failure in one direction must necessarily result in abnormalities in the other. In 1890 Boas attempted to study experimentally intestinal digestion in man. For this purpose he made use of vomited matter obtained by a reflux of the intestinal fluids into the stomach. He also made use of the stomach-tube and of aspiration. Naturally the irritation of the stomach-tube, even if the stomach had been previously irrigated, would result in some gastric fluid, so that unmixed intestinal fluid cannot be obtained. The subject was experimented with while fasting, and

the reflux from the intestines was favored by his decubitus and by massage of the epigastric region. Although this method is not applicable to the study of intestinal dyspepsia in our patients, yet the observations of Boas had a certain practical value in that they demonstrated the influence of bad gastric upon the intestinal digestion. Perhaps the sole result of these experiments, so far as concerns starch digestion, is the statement that patients suffering from *hypochlorhydrie* do not suffer from intestinal troubles; in other words, this is confirmatory of Kellogg's work, which shows that under these conditions starch is digested in the stomach, and the opportunity for intestinal disturbance from undigested starch is not presented.

Another factor of importance in intestinal digestion is the presence of micro-organisms, whereas normal gastric digestion is probably free from them. The conditions favorable to the action of amyllopsin are similar to those favorable to the action of ptyalin; namely, moderate heat, a slightly alkaline medium, and removal of the changed material from time to time. The ferment in the pancreatic juice, distinctly amylolytic (amyllopsin), cannot be distinguished from ptyalin. The digestion of starches results in maltose or glucose, the latter being always the final result. Obviously here we must consider that the effect of the pancreatic fluid on starch may be practically inhibited by the discharge of a large amount of acid fluid through a patulous pyloric orifice in cases of marked gastric acidity—another point at which gastric and intestinal indigestion approach. The *succus entericus* from Lieberkuhn's glands is believed to convert starch into sugar, but under what conditions and to what extent physiological literature is generally silent.

So far as the difference in the digestion of starches at the various points is concerned, we may follow Kirke in stating that while the pancreatic and intestinal juices are able to turn the achroo-dextrin which remains into maltose, and maltose into glucose (dextrose), it is doubtful whether saliva possesses the same power.

The difficulty of reaching the diagnosis of the indigestion of starches in the intestine is already apparent, yet we believe that in a given number of instances it can be arrived at with reasonable certainty. The importance of making this investigation is great when we consider that to the assimilation of changed starch we owe much. On the other hand, we have proof—if proof were

lacking—that the indigestion of starches is a frequent condition; not so frequent, however, as Carteret in 1870 would have us believe, 60 per cent. of dyspeptics, by the prevalence and somewhat good repute of dyspepsia-cures based on raw beef and hot water; and when we consider that in France bread has a prominent part in the dietary, and in other European countries starchy foods are even more largely employed, the importance of the subject is apparent. In this country not only does hasty eating, but bad cooking and the imperfectly raised biscuit and cake, and other pastry, are often saturated with greasy substances and give us reason to believe that starchy dyspepsia is even more frequent.

Taking up the symptoms of intestinal indigestion as referable to the failure of starch conversion, I would place first and foremost constipation, of which the cause is quite likely that the colloid-like unconverted starch does not so readily permit of watery osmosis into the intestine as does the sugar into which it is converted, which acts as a crystalloid. The accumulation of undigested and unabsorbed material may even be considerable and give rise to marked enteroptosis (Glenard). On the other hand, diarrhœa is comparatively infrequent; however, fermentation may go on briskly, so that a large amount of irritating material may be formed and its expulsion take place. Should diarrhœa exist, it is likely to be diarrhœa alternating with constipation, and not the persistent one which may characterize other intestinal conditions.

The symptom next in importance is undoubtedly flatulence, especially that which occurs two or three hours after meals. The question here arises as to how much of this may be due to gases from the imperfect digestion of proteids in the alimentary canal. To clear up the question we must refer to the work which has been done upon various sulphur compounds. Baumann, in 1880, propounded the theory that the combined or ethereal sulphates found in the urine were an index of the amount of putrefactive products absorbed from the intestine; these are chiefly indol, phenol, and skatol; the latter is practically of no importance in this study, since it is found almost exclusively in the large intestine (Filati). Indol by oxidation becomes potassium indoxyl-sulphate, long known as indican. Looking upon indol as the product of bacteria upon the proteids, as Kuhne and Nencki would have us believe, and considering with this the view of Pisenti, that the amount of indican depends largely upon the

activity of the pancreatic fluid, we come close to the clinical fact that clay-colored stools, excessive preformed sulphates, and abundant indican in the urine are associated with defective secretion of pancreatic fluid. To Herter and Smith all who study this subject must acknowledge their indebtedness for their exhaustive work upon the preformed sulphates and indican and their relations with intestinal indigestion. Since, then, we have the proteids as the source of sulphur compounds, the causation of flatulence can be determined by the increased ratio of preformed to inorganic sulphates and by the excess of indican in the urine. Therefore flatulence as a symptom, when the chemical evidence of proteid indigestion is absent, can with reasonable certainty be referred to amylaceous dyspepsia; with greater reason indeed than appears above, because the gastric hydrochloric acid retards bacterial activity, and an excess poured into the intestine markedly interferes with the digestion of starches. Confirmatory of this view is the observation of Kast that neutralization of the gastric juice with sodium carbonate was followed by an increase of ethereal sulphates. Biernacki practically reaches the same conclusion when he says that the excretion of putrefactive products is large with great decrease of hydrochloric acid secreted. The further suggestion can be made that the gases due to proteid indigestion are sulphur-containing, and consequently more obnoxious than those of the marsh-gas series of carbohydrate origin. Yet it must be borne in mind that gluten associated with the carbohydrates is a sulphur-containing body, so that this distinction is not so important as it would at first appear. Coincident with flatulence are the painful phenomena from heaviness, tenderness, and abdominal discomfort to colicky pains. Since flatulence is more marked with starchy than with proteid indigestion, these symptoms are more prominent. Further, because constipation is an important factor, abdominal heaviness in addition to acute pain is frequently found. Not only are local physical signs, as fulness, tenderness, and changes in percussion-note more marked than in proteid indigestion, but the general symptoms are more numerous and persistent. The opportunity for absorption of peccant material, to use an old term, is favored by the constipation, but, as has been stated, the ptomaines of decomposed starch (amulon-ptomaine) are almost as injurious to the human body as the ptomaines of nitrogenous foods. Therefore we note the lassitude, habitual malaise, general debility (partly

from insufficient nutrition), the insomnia, the various sensory symptoms, headaches—vertical, frontal, or occipital—and vertigo. The heart symptoms are prominent, due in part to gaseous distention, and vary in importance from palpitation, cardiac distress, cardiac pain, and tachycardia to syncope. We have also the urticarias, the muddy complexions, cold hands and feet, referable to this cause. We may even observe marked mental changes as hypochondriasis, intellectual apathy, and morbid somnolence.

The picture is a familiar one, but we all have doubtless failed many times in not differentiating this particular form of indigestion, and in attributing too much importance to the gastric, to the neglect of the intestinal digestion. After all, the diagnosis by exclusion, for such must be the method employed, and its accuracy can be readily put to the touchstone of clinical experience. Those in whose persons starch is imperfectly digested tolerate badly the starchy foods. The causes of the indigestion of starches are: (1) Excessive ingestion of carbohydrates, (2) imperfect insalivation, (3) hasty mastication, (4) too diluted starch foods, (5) too great gastric acidity, (6) insufficient or perverted secretion of pancreatic fluid, (7) excess or abnormal activity of micro-organisms, (8) intestinal torpor or exaggerated peristalsis, (9) imperfect absorption of already-digested foods.

The diagnosis rests upon the positive evidence of constipation, flatulence, the sensory phenomena, the general systemic disturbances, and remote painful symptoms existing in a marked degree, and upon the negative evidence as found in the ethereal sulphate-ratio and the amount of urinary indican. The picture seems clearly outlined, and at the close of our study we may say that the diagnosis of the indigestion of starchy food should be reached with reasonable certainty.

DISCUSSION.

DR. L. DUNCAN BULKLEY, of New York: I appreciate this paper very highly, and wish to say that a point in the treatment of indigestion of starchy foods which has impressed me very strongly is the need of thorough mastication and absence of liquids with food. I suppose that every day of my life some patient goes from my office forbidden to drink any liquid with his food or even to take soup. I have him quench the thirst by taking hot water an hour or half an hour before eating. Then he does not want water while eating and the salivary glands will act well.

XXXVI. THE TREATMENT OF ŒDEMA OF THE LUNGS.

BY LOUIS FAUGÈRES BISHOP, A.M., M.D.,

NEW YORK.

ŒDEMA of the lungs is, of course, not a disease by itself, but an event in the course of other diseases. Occasionally, however, it arises suddenly without the underlying cause being perfectly apparent, and at all times it is of sufficient importance and danger to merit separate consideration and prompt and appropriate treatment. Whatever condition may have pre-existed, the onset of œdema of the lungs is indicated by dyspnœa, very marked cyanosis, frothy expectoration, and moist râles all over the chest. If the patient is very weak and does not cough up the exudation, the expectoration may be absent. The indications for the relief of this condition are the re-establishment of the circulation in the lungs, and the stimulation of the functions of the lungs themselves. While we must not minimize the necessity of acting through the heart by means of stimulation, we must place greater emphasis than is usually done upon the direct treatment of the lungs themselves. The usual recommendations of the text-books are much the same as those for the treatment of cardiac insufficiency in any other condition, namely, nitroglycerin, digitalis, strophanthus, etc. The problem is the old one of cardiac stimulation in critical conditions. It will not be discussed here because the object of this paper is to emphasize the value of another procedure, though cardiac stimulation must never be neglected. We refer to *efficient* counter-irritation and the application of moist heat by poulticing of the *whole* chest. Like many other valuable procedures, this has lost its proper appreciation because often improperly conducted. Poultices, as usually conducted in these cases—that is, with poultices perhaps half an inch thick and a few inches broad to various parts of the chest—are worse than useless because their benefit hardly outbalances the disadvantage of the disturbance of the patient; but a large, thick jacket-poultice, either made in one piece or in sections large enough to envelop the whole chest, and thick enough to retain its heat for a considerable time, will often in a few moments bring the patient from a grasping, water-logged condition to one of comparative safety. The mode of procedure is this: apply a

mustard poultice one to ten to the whole chest until the surface is reddened; then remove this and apply the above-described poultice, and renew it, not after the lapse of a particular number of hours, but when it is becoming cool. One who has witnessed the striking results of this procedure, in a case of chronic nephritis that has suddenly taken a bad turn, will ever after rely more upon these things than upon any drug treatment. Properly conducted, this treatment with a heavy patient is indeed a task which would tax the resources of even the best-trained nurse. It is our experience that outside of a hospital ward the only way to have it properly done is to do it one's self. A large, stout patient, weighing perhaps 250 pounds, came under our care suddenly in the middle of the night with œdema of the lungs, threatening immediate suffocation. We procured, in a neighboring feed-store, a half-bushel of linseed meal, and with this, a wash-boiler of hot water, and a sheet, we made a poultice sufficiently large to envelop the chest of this ponderous patient. The effect was so immediate and satisfactory that the attendants were perfectly willing to follow with more poultices of a similar size until the patient was out of danger.

The use of pilocarpine is attended with such marked and immediate physical effects that we think of it as a drug that might be available in desperate conditions. Its effect on œdema in other parts of the body would lead us to its consideration in œdema of the lungs, but in œdema of the lungs the condition is a little different. If an exudation takes place it is rather harmful than otherwise in clogging up the smaller vessels. Whether or not the exudation into the lungs will be temporarily increased coincident with the profuse sweating I do not know, but at any rate it would seem that the risk would not be counterbalanced by the problematic benefit of the withdrawal of a few ounces of fluid from the circulation; however, cases have been reported in which it was thought impending death from œdema of the lungs was averted by the use of jaborandi. There is one organ which has it in its power, if it can be made to do so, to control œdema of the lungs, and that is the heart. If the circulation into the lungs could be brought to just the right condition of pressure in the arteries and freedom of flow in the veins, this condition would adjust itself, but the pulmonary circulation, with its complicated system of vessels, makes it difficult to appreciate just what the disturbance is which induces œdema. It goes without saying that the heart should be

stimulated to the best of our ability. Heart stimulation must always be a question of individual judgment. The man who will clear up the indefinite knowledge of the use of stimulants in disease will confer a great benefit on humanity.

Phlebotomy is a measure which has been resorted to in pulmonary œdema from the earliest times. Its rationality depends upon our view of the causation of the œdema. If we suppose œdema due to blood stasis, we might certainly expect good results from it. Certainly it would suggest itself very strongly in an œdema coming on in a strong person suffering from an acute disease. In a case of pneumonia in a very strong man who had been suffering exposure during the course of the disease, pulmonary œdema set in very suddenly. The condition of engorgement of the lungs was so extreme that death seemed to be impending. I resorted to phlebotomy, taking twelve ounces of blood from the arm. The symptoms subsided for a time, though to return again more gradually, with a fatal termination. I think that in another similar case I would do the same. But always our chief reliance will be counter-irritation and poultices in very acute cases.

XXXVII. SECOND REPORT ON A CASE OF FUNCTIONAL ALBUMINURIA.

BY ELI H. LONG, M.D.,
BUFFALO.

Six years ago I had the privilege of reporting to the Society a case of albuminuria which had been under observation for three years. That report and accompanying chart (*Transactions*, 1890) show the special features of the case to have been the following: Absence of albumin from urine excreted during sleeping hours. Maximum quantity of albumin in urine excreted during first hour after arising and before breakfast. Lessening of quantity, as a rule, after each meal of the day. Disappearance of albumin during pregnancy.

I desire now to report further observations in this case as follows: During this period of six years since the former report the subject has gone through two pregnancies, with a repetition of

the previously reported disappearance of the albumin during each period of pregnancy. Frequent analyses during the last period showed that the albuminuria ceased during the third month.

It may be further reported that now, two years after the termination of the last pregnancy, the albuminuria seems to have disappeared completely. Twenty samples examined since January 1, 1896, and representing every voiding of urine for four successive days, contained no albumin whatever. The subject is now thirty-five years of age. The disappearance of albumin during gestation would argue against the existence of any organic change in the kidneys in this case, and the conclusion is fair that it properly belongs to the class of "functional" albuminurias. The disappearance of the condition with advancing age shows its conformity to the usual course of such cases.

XXXVIII. NOTE ON THE USE OF PERMANGANATE OF POTASSIUM IN THE TREATMENT OF DISEASES OF THE SKIN.

BY L. DUNCAN BULKLEY, A.M., M.D.,
NEW YORK.

REMEDIES which are able to give efficient relief to pruritic conditions of the skin are so relatively few that each addition to the number is not without value, although the range of its applicability may not be as great as might be desired. In the following brief communication I wish to call attention to a remedy which has served me excellently in a considerable number of cases of eczema, and also somewhat in other pruritic eruptions, during the past two years, and which I am prescribing with increasing confidence.

It is quite possible that its use is known to many, but as I learned of it accidentally from a patient, and have not seen it mentioned in text-books or journal articles, I feel that it cannot be very widely employed.

Briefly, it is simply a solution of permanganate of potassium in water, a strength of from 1 to 2 per cent., or possibly stronger in certain cases. This is brushed or mopped over the surface and allowed to dry, which it does very quickly. The well-known

brilliantly pink or magenta-colored fluid turns very soon to a medium dark-brown, staining the skin some little time, and is finally thrown off by exfoliation of the tissues which it has oxidized.

Thus far I have used it mostly on subacute eczema exhibiting patches of erythematous or papulo-squamous surface. I have not commonly employed it on moist or weeping surfaces, but recently a gentleman applied it to such on the thigh with most beneficial effect. It may sting or smart a little if the surface be at all abraded, but this is never complained of, and patients only speak of the immediate relief from the itching in the part.

I have frequently had a little calamine and zinc lotion sopped on after it was dry, mainly to guard against any excessive action of the permanganate. When the surface has tended to dry up too much I have had a little mild or negative ointment applied, after the permanganate was quite dry.

The application of the solution of permanganate needs to be reapplied perhaps twice daily, and some patients have used it oftener with advantage. As it is an oxidizing agent, it often serves very well in reducing thickening of the skin, and I have seen patches which had resisted other treatment melt away under its use.

Although I have mentioned applying another lotion or an ointment over the dried application of the permanganate, there is no question whatever in regard to the effect of the remedy under consideration. In some cases it has been employed alone, without other application, and in other instances the patient has voluntarily omitted the additional medication, finding that this one alone sufficed to give relief. Not infrequently, where other remedies had been employed ineffectually, the addition of the permanganate gave perfect relief.

It is understood, of course, that in thus recommending a particular local application, I do not advise it to the exclusion of other and proper dietary and internal medical treatment; nor do I wish to exaggerate its special value to the deprecation of much other valuable local treatment. I only wish to call attention to a local measure which I believe is not well known, and which has helped me much in managing some rather rebellious cases.

XXXIX. ALCOHOLISM AND PUBLIC HEALTH.

BY HENRY R. HOPKINS, M.D.,

BUFFALO.

MR. PRESIDENT, LADIES, AND GENTLEMEN : What is alcoholism ? Who are the victims of alcoholism ? What is the relation of alcoholism to public health ? What responsibility, if any, rests upon the medical profession regarding the matter of alcoholism ? What is the duty of the Medical Society of the State of New York, at this meeting, upon this question ?

These are some of the more important thoughts, parts of the subject, which we invite you to study for a few moments, and my excuse for thrusting this subject upon your attention is, that for years the speaker has been forced to give the matter particular study, as a citizen, as a practitioner of medicine, as a medical witness, and as a teacher of hygiene in a medical school; from this study he has convictions—not of to-day, but of slow growth and positive proportions ; convictions which he gladly submits for your consideration and discussion ; convictions differing widely from much that is written upon this subject, and from much that it is proposed to teach our children by the express direction and command of the laws of our State.

It would seem to be a reasonable inference that a learned body like this would have no difficulty in reaching an essentially unanimous agreement as to what is alcoholism, and who are its victims; and yet medical literature abounds in able papers, filled with spirited, sharp, and even angry contention over the rival boundary-lines of this apparently simple subject. To the writer it seems that much of this contention is more technical and theoretical than practical. More the work of the experimental chemist and physiologist, the rainbow-chasing criminologist, the fanatical reformer, than of the sober men of balanced minds, the great mass of our learned profession. From such a knowledge of the literature of this question as the writer has been able to gain it would appear that there has always been a reasonable consensus of belief as to the results of the uses and abuses of alcoholic drinks, and the view of the case which we, as hygienists, promoters of the public health,

would take is that view held by the members of our profession chiefly entitled to our respect and confidence.

You will therefore understand that we use the term alcoholism to apply to and to include all those states or conditions in which as a result of the continued abuse of alcoholic drinks, spiritual, moral, or physical health or well-being has been impaired, to the end that the individual loses some part of his efficiency as an individual, as a member of the family, the community, or the State.

It will be observed that in presenting this view the aim and effort of the speaker is not to narrow, but to widen; not to exclude, but to include; and this for the reason that the facts are of such vital importance, so pregnant with unhappiness, suffering, anguish, disease, deformity, and death that all light should be admitted, and that from all possible sides.

With this understanding as to the sense in which we use the term, let us consider the relation alcoholism bears to the public health, and the responsibility which such relation imposes upon the medical profession—that honorable body whose ambitious claim is that to it as to no other belongs the privilege of being the custodian, the promoter, the preserver of the public health.

Upon this question also there would seem to be no place for argument; the testimony from all sides and experience from all quarters—theoretical, experimental, and practical—uniting in one verdict that alcoholism directly or indirectly, immediately or remotely, singly or in combination with other malign factors, is a most potent cause in the production of unhappiness, of improvidence, of immorality, of vice, of crime, of disease, and death. It would seem to be the plain duty of the medical profession, whenever and wherever called upon, to bear testimony to this effect, and that without limitation or qualification. Up to this point our course has been easy, the thought of such broad and general quality, as to have few difficulties or chances of disagreement; but at this point we come in sight of a division of our subject, where convictions lead to action, and when the time for action comes the difficulties of the case increase immeasurably.

Up to this time the speaker has probably enjoyed the intellectual assent and full sympathy of every member of the Society; he has been in the house of his friends; but beyond this point he must expect opposition, and will not be surprised if the opposition claims the support of some of the Society's most eminent and valued members.

This question is now before the people of this State in the shape of a law passed by the last legislature, compelling the teaching of physiology and hygiene, with particular reference to the action of alcoholics and narcotics. It is a question upon which the medical profession has singular knowledge and experience, it is a question which the State may not intelligently settle until the medical profession has spoken, it is a question of great inherent difficulty and complexity—touching with its two hands the heart of our educational system, and the most sensitive and important nerves of the body politic—it is a question in which great popular ignorance and greater popular prejudice makes wrong conclusion particularly easy, and it is a question demanding careful and many-sided study and a right conclusion by every interest of public health and public morality; therefore we may safely conclude that the Society may profitably discuss this question at this time.

In the year 1884, our legislature enacted a law containing the following provision:

Provision shall be made by the proper local school authorities for instructing all pupils in all schools supported by public money, or under State control, in physiology and hygiene.

If the promoters of this measure had stopped at that point they would have been judged not only earnest and sincere in this agitation, but, what is more important, wise in their methods; but they go on and add the words, “with special reference to the effects of alcoholic drinks, stimulants, and narcotics upon the human system.”

This law is in operation for ten years, and apparently does not produce the desired and expected results, and in the present year the same people succeed in passing important amendments. The law of 1895 may be said to contain fully developed thought of the agitators of this matter—a party that call themselves the scientific temperance party—and with the passage of the law of 1895 the matter for the first time attracted general public notice. The law is short, and I give it entire:

LAWS OF 1895.—CHAPTER 1041.

AN ACT

To amend the consolidated school law providing for the study of the nature and effects of alcoholic drinks and other narcotics, in connection with physiology and hygiene in the public schools, approved June 15th.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

SECTION 1. Sections nineteen and twenty of article fifteen of the consolidated school law are amended to read as follows :

§ 19. The nature of alcoholic drinks and other narcotics and their effects on the human system shall be taught in connection with the various divisions of physiology and hygiene as thoroughly as are other branches for not less than four lessons a week for ten or more weeks in each year in all grades below the second year of the high school in all schools under State control, or supported wholly or in part by public money, and also in all schools connected with reformatory institutions. All pupils must continue such study till they have passed satisfactorily the required primary, intermediate, or high-school test in the same, according to their respective grades. All regents' examinations in physiology and hygiene shall include a due proportion of questions on the nature of alcoholic drinks, tobacco, and other narcotics, and their effects on the human system. The local school authorities shall provide facilities and definite time and place for this branch of the regular course of study. All pupils who can read shall study this subject from suitable text-books, but pupils unable to read shall be instructed in it orally by teachers using text-books adapted for such instruction as a guide and standard, and these text-books shall be graded to the capacities of primary, intermediate, and high-school pupils. For students below high-school grade they shall give at least one-fifth their space, and for students of high-school grade shall give not less than twenty pages to the nature and effects of alcoholic drinks and other narcotics, but pages on this subject in a separate chapter at the end of the book shall not be counted in meeting the minimum. No text-book on physiology not conforming to this act shall be used in the public schools except so long as may be necessary to fulfil the conditions of any contract existing on the passage of this act.

§ 20. In all normal schools, teachers' training classes, and teachers' institutes, adequate time and attention shall be given to instruction in the best methods of teaching this branch, and no teacher shall be licensed who has not passed a satisfactory examination in the subject and the best methods of teaching it. No State school money shall be paid for the benefit of any district, city, normal, or other school herein mentioned, until the officer or board having jurisdiction and supervision of such school has filed with the officer whose duty it is in each case to disburse the State school money for such school an affidavit made by such officer, or by the president or secretary of such board, that he has made thorough investigation as to the facts and that to the best of his knowledge, information, and belief all the provisions of this act have been faithfully complied with during the preceding school year.

§ 2. This act shall take effect August 1, 1895.

You will observe that the thought and purpose of the promoters of the so-called scientific temperance have unfolded not a little

between the years 1884 and 1895. What that purpose really is we may judge by looking at these two laws and at the text-book and teaching these laws would compel. At the first we were to be taught the effect of alcoholic drinks, stimulants, and narcotics, but later the demand is that, in addition to this, we shall be taught the "nature of alcoholic drinks and other narcotics." If this means anything it means that we are to be taught chemistry—both inorganic and organic, or at least so much of chemistry as will put the pupil abreast of the knowledge of the various alcohols, alkaloids, ethers, and other chemical substances found in "alcoholic drinks and other narcotics." How densely ignorant our promoters of scientific temperance are of their own subject, as also of educational matters, we get a hint when we remember that the law of 1895 demands that this teaching be done to children who have not yet learned to read, "but pupils unable to read shall be instructed orally." Before proceeding to state some of the objections to this law, objections which, in my mind, demand its early repeal, let me call to your attention that these alcoholic and narcotic matters are to be taught our children for at least four times per week and for at least ten weeks per year, and this upon penalty of withdrawal of State support from any school failing so to teach.

In presenting the objections which come to my mind, please remember that the speaker is making an extra effort to use such moderate and balanced language as befits the dignity of the occasion and the serious importance of the issue involved. His inclination is almost overwhelming to take refuge in invective and execration. He does not remember ever to have met a more conspicuous example of proper motives and improper and impossible methods than in this campaign of scientific temperance.

My first objection to this law relates to the manner of its passage, and is to the effect that it presumes to invade the domain of two distinctly learned professions, our educators and our guardians of public health, and to dictate to both how they shall think and how they shall act, and that without conference or consultation with either. The medical profession, as the same is known to the State, is represented by three State organizations, each holding annual meetings at Albany during the session of the legislature which passed this bill, and so far as I have heard this matter was not submitted to either, or to our State Board of Health. Our educational system is ably represented at Albany by the regents of

the university and by the State superintendent of public instruction and by the State teachers' association. The principles of this law strike at the very heart of the teachers' art. Any of these could give our promoters of scientific temperance advice of the greatest value, but such advice was not sought.

Omissions like these are sufficient ground for able-bodied and ugly suspicions as to the structural soundness of this law.

Let us turn aside for a moment and see what light the textbooks, advised by our promoters of temperance of the scientific order, throw upon this law or upon their motives and purposes.

On inquiry at our high school I learned that the following was in use in our schools: "*Hygienic Physiology*, with special reference to the use of alcoholic drinks and narcotics, adapted from the *Fourteen Weeks in Human Physiology*, by Joel Dorman Steele, Ph.D.; edited and indorsed for the use of schools (in accordance with the recent legislation upon this subject), by the department of scientific temperance instruction of the Woman's Christian Temperance Union of the United States, under the direction of Mrs. Mary H. Hunt, superintendent." This is a book of over 275 pages, is copiously illustrated with numerous colored full-page drawings, and presumes to teach human anatomy and physiology. You will allow me to observe right here that I have always had the conviction that anatomy and physiology are not suitable subjects for teaching in our public schools, and that this conviction was deepened by the perusal of the text-book now under consideration. Of this it must suffice to remark that the figures presented by drawings and text do not belong to the human species or to any other family of the animal kingdom.

We will now try and see what our friends of scientific temperance would have our children taught:

Page 128. ALCOHOLIC DRINKS AND NARCOTICS. Place on the web of the frog's foot a drop of dilute spirit. The bloodvessels immediately expand, an effect known as "vascular enlargement." Channels before unseen open and the blood-disks fly along at a brisker rate. Next, touch the membrane with a drop of pure spirit. The blood-channels quickly contract; the cells slacken their speed, and, finally, all motion ceases. The flesh shrivels up and dies. The circulation thus stopped is stopped forever. The part affected will in time slough off. Alcohol has killed it. The influence of alcohol upon the human system is similar. Alcohol is a poison.

Page 133. Wherever the alcoholized blood goes through the body it bathes the delicate cells with an irritating, narcotic poison, instead of a bland, nutritious substance.

Page 163. Is alcohol a food? To answer this question let us make a comparison. If you receive into your stomach a piece of bread or beef, nature welcomes its presence. The juices of the system at once take hold of it, dissolve it, and transform it for the uses of the body. . . .

If, on the other hand, you take into your stomach a little alcohol, it receives no such welcome. Nature treats it as a poison, and seeks to rid herself of the intruder as soon as possible. The juices of the system will flow from every pore to dilute and weaken it and to prevent its shrivelling up the delicate membranes with which it comes in contact. The veins will take it up and bear it rapidly through the system. Every organ of elimination, all the scavengers of the body—the lungs, the kidneys, the perspiration glands—at once set to work to throw off the enemy. So surely is this the case that the breath of a person who has drunk only a single glass of the lightest beer will betray the fact. . . .

Alcohol, then, is not, like bread or beef, taken hold of, broken up by the mysterious process of digestion and used by the body. "It cannot, therefore, be regarded as an aliment" or food—(Flint). "Beer, wine, and spirits," says Liebig, "contain no element capable of entering into the composition of the blood or the muscular fibre." "That alcohol is incapable of forming any part of the body," remarks Cameron, "is admitted by all physiologists. It cannot be converted into brain, nerve, muscle, or blood."

I will not detain you with further quotations from this text-book of hygienic physiology, but observe that this matter is to be taught to our innocent and helpless children before they have learned to read, and that in the name of science and by the express command of the State. You will also remember that this book and its peculiar teaching is the offspring of the laws demanding the teaching of physiology in our public schools, and we will make no mistake when we construe this law and the motives of its promoters in the light of their statements, found in their text-book, as to the effects on the human system of alcoholic drinks.

Before trusting ourselves to characterize these statements let us steady our minds with a few of the sober, balanced, and judicial utterances of scientific men, made in the interests of public health:

Reference Hand-book of Medical Sciences, page 102. ALCOHOL. PHYSIOLOGICAL ACTION. *Stomach and Intestinal Tract.* The action of this agent upon the stomach and intestinal tract has been one of the bones of contention between the advocates of teetotalism and those who, knowing its virtues, can utilize them. To incorporate the arguments of both sides would be foreign to the scope of this article, which is to give the present status of scientific opinion.

Small quantities of alcohol, properly diluted, taken into the stomach, produce an agreeable sensation of warmth, which soon diffuses itself over the entire body. It is quickly absorbed. . . .

Brain and Nervous System. The primary effect of alcohol (in small quantities) on the nervous system is a stimulation of the functional activity of the brain. This is a result chiefly of a direct stimulation of the alcohol upon the nervous tissue through the increased force of the heart-beat. Its increased frequency and the greater activity of the entire bodily functions undoubtedly assist its local action.

A sense of well-being pervades the body, a greater activity of intellection, increased volubility, and a general exhilaration result, which, enduring for a time, are followed by no depression. . . .

Excretion. Experimenters all agree in this, that not more than 16 per cent. of the alcohol taken can be found in the excreta. The greater portion disappears in the system. As to its mode of destruction, nothing is positively known. . . . If it is destroyed by oxidation, as we have reason to believe, carbonic acid and water, both normal constituents of the blood, would be the final products, and could not be identified as derived from alcohol. . . .

Administration. The physical constitution of the patient, together with the state of the health and the result to be acquired, must form the guide to the proper selection and doses. The carefully conducted experiments of Dujardin-Beaumetz, Richardson, and others agree that one gramme (15 grains) of absolute alcohol to every kilo (two pounds) of body-weight, is about the daily limit that can be assimilated by the healthy adult without disturbance of digestion or other injurious consequences. It is true, however, that patients exhausted by the continued fevers can absorb amounts far exceeding the normal limits without injury; in fact, with benefit. . . .

It may be generally stated that the stronger wines are indicated by the weakened conditions occasioned by the long-continued fevers, chronic suppurative processes, and anæmia from frequent hemorrhages, and for convalescents generally. . . .

Brandies, whiskeys, etc. (of good quality), are indicated, undiluted, in cases of sudden weakening of the heart's action. Given after a full meal they certainly aid its digestion. This group of alcoholic drinks, when not abused, take the place, with the poor, of the costly condiments of the rich, improving the appetite and aiding digestion. Diluted, they can be used where wines are indicated, but not as efficiently. . . .

The beers, ales, and porters are valuable because of the nutritious material they contain. They are readily assimilated and are pleasant to the taste, and the bitter principles contained in them, together with the alcohol, cause an increased flow of gastric juice. They are, therefore, prescribed with food as a dietary measure. The diastase which exists in the beer is present in sufficient quantity to aid in the conversion of the starchy foods.

Their effect upon the brain is not so pleasant as that of wine, due (according to Rossbach) to the oil of hops, which resembles in physiological action oil of turpentine. They are desirable for those who cannot stand the cerebral effects of wines.

Parkes's Hygiene, page 325. BEVERAGES AND CONDIMENTS. *Conclusion as to the Use of Alcohol.* It does not appear possible at present to condemn n

alcohol altogether as an article of diet in health, or to prove that it is invariably hurtful, as some have attempted to do. . . .

As a matter of public health, it is most important that the medical profession should throw its great influence into the scale of moderation; should explain the limit of the useful power, and show how easily the line is passed which carries us from the region of safety into danger, when alcohol is taken as a common article of food. . . .

Dietetic uses of Alcoholic Beverages. In wine there are some albuminous substances, much sugar (in some wines), and other carbohydrates and abundant salts. Whether it is that the amount of alcohol is small, or whether the alcohol itself be, in some way, different from that prepared from distillation, or whether the coexistence of carbohydrates and of salts modifies its action, certain it is that the moderate use of wine, which is not too rich in alcohol, does not seem to lead to those profound alterations of the molecular constitution of organs which follow the use of spirits, even when not taken largely. Considering the large amount of vegetable salts which most wines contain, it may reasonably be supposed that they play no important part in giving dietetic value to wine. . . .

In beer there appear to be four ingredients of importance—namely, the extractive matters and sugar, the bitter matters, the free acids, and the alcohol. The first, no doubt, are carbohydrates, and play the same part in the system as starch and sugar, appropriating the oxygen and saving fat and albuminates from destruction. Hence, one cause of the tendency of persons who drink much beer to get fat. The bitter matters are supposed to be stomachic and tonic, though it may be questioned whether we have not gone too far in this direction, as many of the highest-priced beers contain now little else than alcohol and bitter extract. The action of the free acids is not known, but their amount is not inconsiderable, and they are mostly of the kind which form carbonates in the system and which seem to play so useful a part. The salts, especially potassium and magnesium phosphates, are in large amount.

It is evident that in beer we have a beverage which can answer several purposes, viz.: can give a supply of carbohydrates, of acid, of important salts, and of a bitter tonic (if such be needed) independent of its alcohol. . . .

In moderation it is no doubt well adapted to aid digestion and to lessen to some extent the elimination of fat.

Text-book of Hygiene. Third edition. Rohé. Page 119. *Beverages Containing Alcohol.* Alcohol is not necessary to persons in good health. Probably most persons, regardless of their state of health, do better without it. Its habitual use in the form of strong liquors is to be unreservedly condemned. The lighter wines and malt liquors, if obtained pure, may be consumed in moderate quantities without ill effects. Even in these forms, however, the use of alcohol should be discouraged, or, perhaps, prohibited in the young. . . .

Beer and its correlatives have considerable dietetic value, owing not merely to the alcohol they contain, but largely to the sugar and acids enter-

ing into their composition. When used to excess they often cause a considerable accumulation of fat.

Practical Hygiene. Coplin and Bevan. Page 174. *Food.* Alcoholic beverages as a food. Yeo, in sympathy with Parkes and others, believes that the maximum amount of alcohol, whether in the form of spirits, wine, or beer, which should be taken by a healthy adult, should not exceed one and one-half fluidounces in the twenty-four hours. In this amount it is believed to be a stimulant to the circulatory, respiratory, and nervous system, increasing the appetite and facilitating digestion.

Gentlemen, this is the teaching of the science of medicine upon this subject, and unless we are content to have our text-books the laughing-stock of students we will see to it that whatever is taught on the effects of alcoholic drinks upon the human system shall be after this manner.

Regarding the text-book produced by our alleged promoters of scientific temperance, it may be said that there is but slight resemblance between title and subject-matter. Professing to instruct innocent and helpless children upon the effects of alcoholic drinks, it gives a lurid and hysterical dissertation, in language almost vulgar, upon absolute anhydrous alcohol, a substance known only to the chemist, and then only as a rare chemical curiosity. As a whole, nothing could be more misleading, misrepresenting, and language can scarcely be more immoral.

It is impossible to believe that good can come from such false witness and false teaching, and it needs no very keen insight to foresee that the future public health and morals are seriously menaced by this well-meaning jesuitism. This movement seems to be devised to compel the teaching of the contents of this book to the youths of this State, and, regardless of the high motives of its promoters, regardless of who voted for the bill or who signed the law, I do not hesitate to charge that it came from sheol and is in the handwriting of the father of lies.

But let us advance from details to principles, and suppose that the so-called promoters of scientific temperance had come with a bill giving the best thought of the most competent educators of the State upon the fundamental question, Can the physiology and hygienics of alcoholics and narcotics be taught in our public schools with advantage? And if this simple question, without errors or blunders, was put to the medical profession, what have we to say? After relieving the question of every embarrassment which the narrowness, the ignorance, the fanaticism of its friends have put

upon it, is there sufficient merit in the case to warrant the State in placing upon its statute books the order compelling this teaching?

To which I make answer, without hesitation or reservation, there is not. And this answer is given in the light of the knowledge, experience, and responsibility of many years as family physician, as teacher of hygiene, as one proud to be a citizen of the Empire State, and, more than all besides, as the father of a Christian family. To my mind there are three objections to the root-principle of this law, either of which, if valid, is reason sufficient for its repeal.

First. That the fundamental conception of this law is an offense against science, in that it proposes, in the name of science, to store the mind with facts of a kind the mind is utterly unable to receive, arrange, digest or assimilate, and that the result must be either waste of time and effort on the part of child and teacher, or the lodgement in the mind of the child of a brood of half-truths, partial truths, distorted truths, certain to stunt the mind, to deform the mould of thought, to produce a pseudo-scientist; the most helpless, hopeless, intractable, incorrigible citizen with which we may burden the State. The pseudo-scientist is the thorn, the thistle, the mildew, the canker-worm, the pest of our time; his breed does not need cultivation.

Second. The thought of this law is an offense against art, in that it violates the principle of form and place and demands that the loathsome facts and secrets of the pathological museum, the physician's consulting-chamber be paraded in our drawing-rooms, class-rooms, and nurseries; that innocent minds be made common sewers; that the *Kreutzer Sonata* and the *Heavenly Twins* be provided as text-books—recreative and instructive reading for our growing girls and boys. The potential evil of this wholesale poisoning of springs, this widespread destruction of innocence, can neither be overestimated nor overstated.

Third. This law is an offense against religion in thought and in act, in what it assumes and in what it does. It entrenches upon and violates the domain and province of religion, the right to instruct in morals, and proposes to substitute the dicta of the chemist and the physiologist in the place of the command from Sinai. But it may be urged against this position that religion has no place in our public school system, and that, therefore, there can be no intrusion; that science is at home in her own house and may

do as she likes with her own. To which we may observe that there are questions, and more particularly those of morality and religion, which town-meetings, State legislatures, or general governments do not settle.

All of these may have determined that morality and religion shall not be taught in our public schools, and the result will be that morality and religion will be taught in our public schools or our schools will cease to teach anything.

I would commend to the most serious attention of our thinking citizens the most significant fact that some forty of our States have made provision by statute to enforce in different ways that monstrous conception, the teaching of a so-called scientific morality. No State, however, has gone as far as New York.

Again, this law offends religion in that it reverses the value of soul and body and would teach a material morality, having as its object the preservation of the body, to the neglect of the more important duty and responsibility of the care of the soul. The preservation of chastity and temperance in a singular degree is the province of religion. In this work her "Thou shalt not" sounds on from age to age. Where religion is direct, positive, authoritative—science is hesitating and indefinite. "Ye shall not surely die" is her usual expression.

In consideration of the foregoing it would seem to be the duty of the medical profession to advise, in the interest of science, art, and religion, that it is inexpedient to urge the teaching in our common schools of physiology regarding the effects of alcoholic drinks and narcotics, but should other counsels prevail, and, after proper consideration of the matter, it should still be determined to teach our children of this matter, then, surely, it is the duty of the profession to demand in the interests of morality and decency that what is taught shall be the simple truth.

XL. THE TREATMENT OF MALIGNANT TUMORS IN
SO-CALLED CANCER CURE INSTITUTIONS.

BY NATHAN JACOBSON, M.D.,

SYRACUSE.

It is rather my purpose in this paper to invite a discussion upon the subject of what is claimed for and accomplished in the so-called "cancer cure" institutions than to enter widely upon its consideration. It is known to all that people afflicted with what is, or what they are told is, malignant disease seek relief from their afflictions at the hands of these "cancer specialists," both because of their fear of the knife and the glowing promises made for their certain cure by escharotics. The claims of these cancer hospitals are set forth in very seductive language and the most positive assurance is given that their method, and only their method, can effect a permanent cure.

While not aiming a blow at any single institution—as my intent is rather to discuss methods and results—my attention has been particularly directed to the work done in one of them, and I assume that this work is the type of all.

In the pamphlets issued by this and similar institutions it is stated in vigorous language that the knife fails to cure more than 95 per cent. of the cases operated; that the only argument in favor of operation upon cancer of the breast, for example, is that it can be done in from one to three hours, and the wound healed in from two to four weeks. But in the same breath we are assured that such a procedure is certain to witness a return of the disease in worse form, and that the arm on the diseased side is sure to be impaired and in many instances rendered entirely useless.

It is further stated that the entire profession recognizes the inability of the knife to remove the disease, and hence recommends operation, only as a last resort. Moreover, the most serious objection to removal of the breast by operative measures, we are told, is that the surgeon is unable to determine, be he ever so skilful, whether or not he has removed the last vestige of the disease, while the escharotic method entirely circumscribes the mass, protects the healthy parts from further invasion, and when the slough has separated there remains a granulating wound so absolutely bloodless that one is enabled to determine what portion,

if any, of the disease still remains. We are further informed that if any cancer cells exist, they positively stare you in the face, and that they can be at once removed by the same method. It appears, furthermore, that the particular remedies applied are of secondary importance, and that the value of the treatment lies in this ability to determine whether or not the disease has been removed, and only their particular method renders this possible.

The claim is further set up that no other known method is as painless, and produces so little inconvenience; that the pain is never severe enough to prevent sleep, nor to confine the individual to her room.

It is asserted by one of these institutions that up to the present time there has never been a failure to effect a permanent cure in any case in which their physicians were able to give a favorable opinion. To use their own statement, "We can truthfully say that we never fail to cure any case of cancer where we have had and accepted the first opportunity for treatment," and this is from the institution of which we will hear more in detail. In a circular at hand we learn that more than three-quarters of all the physicians and surgeons in good standing in the United States indorse their method. The serious charge is made that the surgeon is aware of his inability to cure this disease, and that for mere pecuniary gain, and absolutely for no other reason, he performs an operation, knowing full well that it cannot prolong life, but in reality shortens it, as the disease is certain to progress more rapidly after than before operation.

What these "cancer specialists" designate as cancer and treat as such, is perhaps summarized best in one of their published statements, which I quote verbatim: "Nearly all those lumps and kernels that appear on or in the breast, and all those sores, lumps, or unnatural appearances in the form of crusts, warty excrescences, which occur in either sex, but far more commonly in the male, on the lip, nose, eyelids, face, or any part of the surface, are cancers, and should have immediate attention. The only symptoms for months, and in many cases for years, are occasionally a stinging, shooting, burning, itching, or creeping sensation, and in many cases not even any of these. If you have a branny, scaly, crusty, or warty appearance, with an occasional exfoliation of the same upon the face, lip, nose, or any other portion of the skin, attended with any of the above symptoms, or giving an occasional sensation as though a fly had alighted upon the part or a hair were tickling

it, the evidence should be conclusive that your trouble is cancer, and no delay should be made in having it cured. Life is far too valuable to be tampered with or sacrificed."

We are assured that the time required for the cure of these cases by escharotics is quite brief. The enticing statement is made in a pamphlet issued by an institution, whose work I shall presently analyze, that by recent improvements in their method they are enabled to shorten the stay of their patients, so that for cancer of the breast, even though extensive, three to five weeks suffices, and in the less severe cases the period is proportionately shorter. In another institution as low a period as two weeks is given. Each case, however, can be and is told, approximately, how long a time will be required to effect a cure after the preliminary examination has been made.

Unfortunately, many of these institutions are in the hands, not of ignorant, uneducated pretenders, but of men who have been liberally educated in the arts and are graduates of recognized medical schools.

My attention was particularly called to this subject by the treatment a lady who had previously been under my care received in what is claimed to be the largest and most successful of the sanitariums for the cure of cancer in the United States. Certain it is, this institution in the printed circulars it issues makes the most extravagant representations as to the simplicity, painlessness, brevity, and efficiency of the treatment.

To place in bold relief, however, the actual condition of things as opposed to the false and untenable positions taken by the so-called "cancer specialists," allow me to present to you not only the history of this patient, but also what was unearthed during her stay in this cancer hospital.

Mrs. A. consulted me November, 1891, when I found present in the outer upper quadrant of her left breast a movable, hard, nodular tumor, which presented the usual appearances of scirrhus. I urged amputation of the breast. She was fearful of the knife, and would not consent. For a year I had her under observation, during which time the growth made very slow progress, remaining freely movable, excepting as it grew toward the surface, where it became quite adherent to the skin. However, it could be entirely circumscribed, and at no point was it attached to the chest wall. There were no glandular enlargements recognizable in the axilla. The continued presence of the tumor and the diagnosis given naturally alarmed her, and without seeking further medical advice she placed herself in a widely known "cancer institution."

She entered it September 19, 1893, and was assured that her case was a promising one, and that a cure was certain. Fourteen months of treatment—I might more truthfully say of torture—were spent here. Her husband states that the first application was made at 10 o'clock in the morning, and that until 4.30 in the afternoon she was almost wild. The application was repeated on three consecutive days, and afterward every three to four weeks, during the period of her stay. Widespread sloughing resulted. She became steadily more emaciated and enfeebled, until, on the 10th of October, 1894, she was obliged to take to her bed, and then was told she had pneumonia. On the night of November 5, 1894, she was carried out of the "sanitarium," placed upon a train, and transported home. On leaving the institution her medical attendants declared that there was no trace of the malignant disease left; that she was entirely clear of every vestige of cancer.

I saw her on November 11, 1894. Her pulse was so feeble that I could scarcely feel it; the respirations were 24 and the temperature 99°.

At the previous site of the left breast, instead of a mamma, there was extensive scar tissue. Midway between the mammary and axillary lines, on a level with the third rib, there was an unhealed area. This side of the chest presented patches of dulness. There were no râles, and but a small amount of air entered the lung. The entire right lung was likewise infiltrated, presented no râles, but only admitted a small amount of air. From this date she gradually failed until she faded out, December 14, 1894.

After death, as she was placed in the recumbent posture, a position she could not fully assume during life, a large amount of serum poured out of the chest through the unhealed area on the left side, which opened directly through the chest wall into the left pleural cavity. Pleural adhesions existed on all sides. Each pleural cavity contained serum. The left lung was filled with small secondary deposits, but at no place was there direct extension inward from the surface, nor was there any involvement of the ribs. The right lung was very much contracted, solidified here and there, and saturated with secondary growths, varying from one-half to three-quarters of an inch in size. The heart was thin and flabby. There was no evidence of secondary involvement of any other organ.

While at the institution her husband had been her constant attendant. He became well acquainted with the various inmates, and, as a matter of personal interest, formulated a table which records the names of all the inmates of the institution at the date of admission of his wife, *i. e.*, September 19, 1893. His table notes the residence, the respective age, sex, date of admission and dismissal of the various patients, the site at which the disease was located, and the ultimate termination of the various cases.

PATIENTS UNDER TREATMENT, SEPTEMBER 19, 1898.

Name.	Residence.	Age.	Sex.	Admitted.	Discharged.	Site.	Died.	Remarks.
Mrs. M. A. J.	Philadelphia, Pa.	72	F.	June, 1898	April 10, 1894	Breast.	April 20, 1894	
Mrs. J. K. C.	Ohio.	50	F.	March 22, " "	Dec. 18, 1893	"	August, "	
Mrs. R.	Sussex Corners, Can.	62	F.	Jan. " "	Jan. 19, 1894	"	April 15, 1893	
Mrs. E.	Roston, Mass.	45	F.	July, " "	Feb. 20, " "	"	Nov. 16, 1894	Died in the Institution.
Mrs. K.	Whitten, Iowa.	53	F.	June, " "	Dec. 4, 1894	Breast.	May, " "	
Mrs. W.	Washington, D. C.	70	M.	Sept. 15, " "	Oct. 30, 1893	Near nipple.	June, " "	
Mrs. S.	Syracuse.	44	M.	Sept. 19, " "	Nov. 6, 1894	Breast.	Sept. 14, " "	
Mrs. A. I.	Massachusetts.	40	F.	Aug. 1, " "	Dec. 24, 1893	"	Sept., " "	
Mrs. D.	Pulney, Vt.	60	F.	Oct. " "	March 8, 1894	"	April, " "	
<i>Gone home to die.</i>								
<i>Hopeless.</i>								
J. D.	Lodi, Cal.	55	M.	July 4, 1898	Sept. 15, 1894	Face.	.....	Hopeless.
Mr. T.	Sacramento.	50	M.	August, " "	August, " "	Lip.	.....	Has some hope yet; trifle.
Mrs. B.	Milwaukee.	60	F.	Oct. 14, " "	March 8, " "	Womb.	.....
A. Mc.	Worcester, Mass.	62	F.	Nov. 24, " "	October, " "	Breast.	.....
G. C.	Boston, Mass.	45	F.	April 1, " "	March 13, " "	"	.....
Mr. V. B.	New York.	50	M.	May 15, " "	Dec. 30, 1893	Eye.	.....	Again developed, but is quite hopeful.
<i>No recurrence of disease.</i>								
Mrs. F.	Nebraska.	45	F.	July 15, 1898	June, 1894	Breast.	.....	Dr. V. said would return.
Miss B.	Hartford, Conn.	60	F.	August, " "	Nov. 28, 1893	"	.....	Size of a hickory-nut.
H. W.	New Orleans.	80	M.	Sept. 1, " "	March 1, 1894	Face.	.....
Mrs. N.	Massachusetts.	88	F.	August, " "	Dec. 30, 1893	Breast.	.....	Has again recurred.
Dr. C.	Holland Patent, N. Y.	70	M.	August, " "	August, 1894	Face and nose.	.....	Trifling.
J. C. H.	New Brunswick.	50	F.	July, " "	Nov. 29, 1893	Forehead.	.....
Mrs. B.	Glen Falls, N. Y.	55	F.	Sept. " "	Dec. 4, 1894	Breast.	.....	Size of a bean.
Mr. W.	Connecticut.	55	M.	Sept. " "	Oct. 30, 1893	Cheek.	.....
<i>Doubtful.</i>								
Mrs. W.	Philadelphia, Pa.	50	F.	Oct. " "	July, 1894	Breast.	.....	Fearful of recurrence.
Mr. W.	Oswego, N. Y.	45	M.	Oct. 5, " "	Feb. 21, " "	Nose.	.....	Slight case.

Let me present to you these statistics. Whether they are better or worse than we could obtain from the same institution at other times, or whether this tabulated statement tells the full truth for all time, I cannot say. Certain it is that these "cancer specialists" do not publish their statistics and that it is rarely we can ever obtain exact information concerning them.

To avoid any legal entanglement, as I am not desirous of court-ing a lawsuit, I do not mention the name of the institution. I can assure you, however, that my statistics are absolutely trustworthy and that they are presented as furnished me.

It appears that there were twenty-six patients in the "hospital," September 19, 1893. These are classified in four groups. The first contains ten cases of cancer of the breast and includes my patient. All of these had been subjected to the treatment, and each one of the others was dead when my patient passed away, December 14, 1894. One of these after a period of treatment of five and a half months died in the institution. Another lived ten days after her dismissal; still another died in four weeks, my patient in six weeks, and yet another in two months. None lived longer than nine months. One of these was under treatment in this institution for a period of one and a half months, one four and a half, one five and a half, and the remainder from nine to fourteen months, with an average of eight months for the ten.

In the next group are placed six cases who were under treatment for periods of five months, seven and a half months, eleven, twelve, and fourteen months, respectively, with an average of ten months, and who after this prolonged period of torture were finally pronounced hopeless and sent home to die. How many of these are dead I cannot state, inasmuch as their cases have not been followed up. In this class the breast was involved twice, the uterus once, and likewise once each the eyelid, lip, and face.

In the third series were eight cases indicated as not having recurred. Of these four were of the breast, and four were epithelioma of the face, one being described as being the size of a "hazelnut," the second of a "bean," the third as "trifling," and the fourth involving the face and nose, and is marked as having again developed. The latter, therefore, should not be included in this group, nor should one of the breast cancers, which also has given evidence of return.

The two remaining cases are classified as doubtful, inasmuch

as there was fear of recurrence of one where the breast was involved, the treatment having been prolonged for a period of eight months, and the second one marked as a slight case affecting the nose, she having been an inmate of the institution for four and a half months.

To summarize, then: Of the twenty-six patients, ten were dead at the time the cases were tabulated, six were pronounced hopeless, three more had the cancer recur, and seven believed themselves to be cured. Among the latter, four certainly were very trifling affairs. Whether all of these were positively cancerous there is grave question, and whether all so indicated and not heard from have remained free from recurrence, I cannot state. But were we to concede that they all were cancers and that none had recurred, the results still make a frightfully bad showing.

When we compare these results with the fair promises held out by these institutions of the certainty of cure, where the patients are accepted for treatment and assured that their cases are favorable for escharotic treatment, it becomes at once apparent what an awful misrepresentation these institutions make and how great the imposition is.

The statement, as you will recollect, is made by them that the regular profession resort to the knife simply for pecuniary gain. The husband of my patient informs me that he paid \$50 per week for the so-called treatment of his wife during the entire period of fourteen months, and this included neither her board nor room, but was simply for the so-called "professional visits" of her medical attendants. In short, for the "professional treatment," exclusive of all other necessary expenditures in this case, the fees amounted to \$3000.

I am informed that one of the patients in the second group, a man of very limited means, and whose home was in California, was promised a cure with two months' treatment. After fourteen months the poor man turned over all the money he had except barely enough to carry him home, with the cancer of the face not only uncured, but much worse than when he entered.

It is unnecessary for me to state to this Society how untruthful the charges against our profession are, how absolutely false is the statement that 95 per cent. of cancers treated by the knife do not recover; that it is impossible to reach beyond the disease with the knife in a case where it can be circumscribed; that the prospect

is less favorable by operative procedure; and that, in short, all of the claims made by these so-called "cancer specialists" are absolutely unwarranted.

I have not discussed the subject from the standpoint of pretended cures for cancer when the patient has only been afflicted with an innocent tumor. That many of the so-called cures are of this kind, there can be no doubt. This is apparent in the statement quoted which defines malignant disease from the standpoint of these "cancer specialists." To make the table yield the best possible returns for them I have conceded that all of their cases were cancer. The results are horrible enough at best.

The table, which is presented on page 423, will, I believe, bear careful study.

DISCUSSION.

DR. L. DUNCAN BULKLEY, of New York: I think we owe a debt of gratitude to Dr. Jacobson for this paper. I have a great deal to do with patients of the kind who enter so-called cancer institutions, and I wish to corroborate all that the author has said. Many cases of skin diseases not related to cancer, such as syphilitic sores, come under my notice after having been in such institutions for cancer. The question came to my mind while the author was reading, whether legislation could not be secured giving to health boards power of inspection over these institutions?

[Later Dr. Bulkley offered a resolution in the Executive Session, and it was adopted by the Society, directing the Committee on Legislation to advocate the passage of a bill by the Legislature placing so-called cancer institutions under control of the State Board of Health.]

DR. F. W. SCHAFFER, of Gloversville: My observation the past forty years or more has been in entire accord with that of the reader. I can recall scores of cases of cancer which have gone to so-called cancer cures, and I never knew a case during my long years of observation which went to one of these institutions and received any benefit whatever. They all go the same way, the way of death.

DR. W. S. ELY, of Rochester: I wish to express my thanks to Dr. Jacobson for his strikingly original and valuable paper. I believe it is the first time we have ever had presented to us the internal working of these so-called cancer cures, and I trust the paper will be immediately printed in some of our medical journals in order that the facts which it exposes may come to the knowledge of that large class of patients who are inclined toward such institutions. If after reading it they choose to go to them, we can say they do it intentionally and against the best knowledge which can be furnished them.

XLI. A MEDICO-LEGAL NOTE.

By A. WALTER SUITER, M.D.,
HERKIMER.

MUCH interest always attaches to any topic of medico-legal character, however limited may be its scope or infrequent its application.

In every case at bar, when medical testimony is adduced, the field and line of inquiry may be such as to involve and bring to consideration questions for the elucidation of which no practical or experimental data are at hand. Opinion evidence (so-called), then, necessarily becomes an essential factor, and conflict is inevitable.

Under these circumstances the personal equation leads to differences in judgment and consequent disagreements which, in a large proportion of instances, serve to embarrass the administration of justice, cast reproachful imputations upon a learned and honorable profession, and lower the high standard which should be accorded to medical science by the courts.

A recent experience suggests the presentation of these remarks to accompany a brief statement of questions which arose in a trial held at a term of the Supreme Court of the fourth judicial district in the State of New York under an indictment for murder in the second degree.

The writer hopes by this note to particularly call attention to a previously undetermined point in the pathology of gunshot-wounds, and, by an illustrative case, to furnish an authoritative example for future guidance.

The prisoner, an indigent and disreputable person, was charged with causing the death of an individual by a pistolshot-wound inflicted during an altercation.

The ball entered the left side of the body of the victim while he was in an erect posture, about one and one-half inches below Poupart's ligament in Scarpa's triangle, and slightly to the right of the median line of the thigh; passed downward, backward, and transversely, skirting the urethra just behind the scrotum, to the opposite side of the body, where it was found at the autopsy imbedded in the gluteal muscles of the right side.

In its course it severed several small vessels from the external

circumflex branch of the profunda femoris and caused a rent in the coats of the femoral artery.

An immediate and profuse extravasation of blood into the surrounding tissues was produced which ultimately resulted in the formation of a traumatic aneurism. The hæmatoma attained to very large proportions and was said to have contained a half-pint of blood, with consequent distention of Scarpa's space.

The physicians who were summoned made an attempt by probing to locate the ball, but were obliged to desist, as its course could not be satisfactorily determined. Upon the day following the injury the patient was removed from his home to a hospital—a distance of fourteen miles by rail—where, shortly after his arrival, the operation for ligating the supplying external iliac artery was undertaken and successfully performed.

Symptoms of septic poisoning supervened, and, although efforts were made by opening the wound and draining to avert the issue, death was inevitable and took place upon the evening of the third day after the reception of the injury.

At the coroner's investigation, and subsequently at the trial, it was made to appear that the immediate cause of death was septi-cæmia, as a consequence of the absorption of septic organisms from the wound.

The writer, having been employed by the court to prepare for his counsel a scientific theory of defense for the prisoner, proceeded upon the following facts and assumptions:

1. It was admitted on the part of the prosecution that the immediate cause of death was septic infection consequent upon the wound.

2. Ligation of the external iliac artery requiring cœliotomy was not performed until nearly twenty-four hours had elapsed from the time of the injury; meanwhile the patient had been removed from his home to the hospital, a distance of fourteen miles, at an unfavorable season of the year.

3. No attempt was made to ligate the femoral artery above the arterial wound, cut down upon the point of injury, cleanse, and drain the surrounding tissues.

4. Injudicious attempts at probing, with an instrument which presumably was itself a cause of infection, were undertaken—the attending physician not being able to testify that the probe had been cleansed and sterilized for a long time previous, possibly two years.

5. A probe is an instrument commonly used in contact with septic organisms, and if not properly and completely sterilized before its introduction into recently injured tissues might, and presumably would, convey the bacteriologic elements which, with favoring conditions, would doubtless excite the process of fermentation of which septicæmia is the final result.

6. In the case on trial the evidence disclosed a probable direct relative connection between the possibly infected probe and the septicæmia which caused the patient's death, and made apparent a serious measure of doubt as to whether the victim might not have survived had the circumstances been otherwise.

These facts and assumptions were placed in evidence chiefly by cross-examination of the witnesses called for the people, and also by direct testimony submitted on the part of the defense. Upon the theory implied therein the case of the defense was rested, the counsel relying upon the court to charge consideration by the jury of all reasonable doubt in favor of the prisoner. The jury returned a verdict of manslaughter in one of the lesser degrees, but in view of the previous bad record of the prisoner the extreme sentence was pronounced by the court.

For the purpose of counteracting the impression likely to have been created in the minds of the jury, the prosecuting officer raised the important question, Can a septic bullet convey a specific micro-organism, unsterilized by the act of firing, and thus infect a gunshot-wound?

This interrogation was proposed to the writer while he occupied the stand as a witness for the defense. As a matter of opinion, a negative reply was returned, and without knowledge that definite or experimental study had been given to the somewhat novel question, the following formula of reasons in support of the opinion was expressed:

1. A large proportion of the infectious bacilli would probably be removed mechanically by the passage of the missile through the weapon, by rapid transit through the air, and by the penetration of intervening clothing and the integument.

2. Disinfection would be accomplished by the production of heat and the generation of germicidal gases at the time of the ignition and explosion of the powder contained in the cartridge.

3. The amount of heat produced by the friction of the ball in its passage through the barrel of the weapon would undoubtedly reach the thermal death-point of all infecting germs.

4. The normal atmospheric pressure is fifteen pounds to the square inch, and the velocity of a bullet eighteen hundred to twenty-two hundred feet per second. The molecular motion caused in transit between these two highly resisting forces would without doubt continue and probably augment the disinfecting heat, and the latter would be intensified by any intervening compact substance and by contact with the body itself.¹

This reply, although given in an impromptu manner, doubtless served on that occasion to meet and cover the objection raised by the prosecuting attorney, but even while the case was pending a remarkable series of experiments was in progress, conducted by Dr. Louis A. Lagarde, Captain and Assistant-Surgeon, United States Army, to establish the truth regarding the effect of septic projectiles in gunshot-wounds. His studies have been very comprehensive and were characterized by an ingenious application of the universally recognized principles of bacteriologic science. The results would seem to disprove the theories advanced by the writer when his opinion was demanded, which fact he now cheerfully acknowledges in the interest of science.

Details concerning Dr. Lagarde's experiments may be found in a special report to the Surgeon-General of the United States Army, also in a paper read before the Pan-American Medical Congress, and in an article entitled "Septic Bullets and Septic Powders," which was read before the Association of Military Surgeons of the United States, at Buffalo, N. Y., in May, 1895.

Healthy, susceptible animals were shot at ranges varying from ten to six hundred feet, and those only whose wounds were of a non-fatal character were kept for subsequent observation. The bullets used were such as are ordinarily fired from pistols and rifles, and all were infected a short time before being fired by placing upon them specific micro-organisms, particularly the bacillus anthracis from recent cultures.

In the majority of cases the animals died a few days later, with symptoms indicating infection corresponding with the germ used.

¹ It is a well-known fact that "when a bullet is instantly checked in its passage, as by striking a bone in the body, it is often found partially fused."

"As a cannon-shot strikes an iron target a sheet of flame pours from it." Steele's "New Physics."

"The track of a cannon-ball is always observable at night as a sheet of flame."

"A pound weight falling 772 feet will generate enough heat to raise the temperature of one pound of water one degree." Jule's "Law in Physics."

"Heat is motion," and conversely motion is heat.

In each instance cover-slip preparations of blood taken after death from various organs of the body showed the presence of the specific bacillus, and from them cultivations were made in various media. In some cases bones were struck and fractured with no apparent difference in result.

The justifiable conclusion was reached that hereby is offered "a reasonable explanation for the occurrence of various infections like tetanus, malignant oedema, erysipelas, etc., in a fair proportion of the cases following gunshot injuries."¹

Interesting experiments were also undertaken by the same observer to prove the septicity of the non-sterilized powders generally employed to charge the weapon and propel the ball, with affirmative results in the majority of instances. The results were negative when sterilization of the powder was accomplished beforehand, but when the previously sterilized powder was mixed with a relatively small quantity of street dust, or with 10 to 20 per cent. of earth, colonies of various bacterial organisms were incubated in due time at room temperature after being discharged into agar-agar or gelatine plates. It was found, as would be expected, that the germs were conveyed by the unburnt grains of the powder. In the black powder commonly used, it is stated that at least 43 per cent. escapes ignition at the time of the explosion.

Powder infected with anthrax spores was discharged into the ears of healthy rabbits at short range, and, in the instances where unburnt grains penetrated the skin, the animals sickened and died in from three to five days, cover-glass preparations of blood from the heart, liver, and spleen revealing the presence of the corresponding bacilli.

It is expected that this paper will serve to demonstrate how an *à priori* judgment, although admittedly plausible and based upon well-grounded principles in natural philosophy, may be disproven and corrected when the test of special experimentation is applied; that it will also furnish another illustration of the importance of the new science of bacteriology, and direct attention to the probable establishment of the fact that no theory of defense or prosecution can be sustained in cases involving questions relating to septicæmia in association with gunshot-wounds without due regard for the possible infectivity of the penetrating missile.

¹ Louis A. Lagarde, Medical Record, vol. xlvii. No. 25, p. 785.

XLII. TREATMENT OF FRACTURE OF THE PATELLA WITH
CONTINUOUS EXTENSION AND WITHOUT CONFINEMENT
TO BED.

By JOSEPH D. BRYANT, M.D.,
NEW YORK.

It is not my intention to call notice to anything essentially new, nor to make any portentous claims of the great benefit to be derived from giving heed to what may now be said regarding the subject of this paper. However, it is the intention of the writer to renew suggestions already made by him some time since bearing on the question of personal comfort and the proper physical status of patients who are suffering from fracture of the patella, and who for any reason are regarded as improper subjects for operative procedures or for continuous confinement in bed.

About three years ago this method of treatment of fracture of the patella was presented to the attention of the profession by the writer, along with a statement of the results in nine cases thus treated. Since that time several additional cases have been added to the record. It appears to me that I can do no better now than to describe again the method of application of the apparatus. In doing so the verbiage of the previous description will be employed very largely, indeed—amended, of course, here and there by suggestions and modifications that are the legitimate product of a greater experience. The application of the mechanism can be properly divided into four steps :

FIRST STEP (Fig. 1). This step consists in the application to the leg of a plaster-of-Paris splint extending from the base of the toes up to and partly surrounding the lower fragment of the patella (3, Fig. 1). The plaster casing is applied closely to the leg at a time sufficiently in advance of the succeeding steps to permit of its becoming thoroughly hardened. The upper and anterior border is carefully shaped so as to hold the lower fragment of the patella in proper position.

The functions of this splint are threefold : (1) It affords ample protection to the foot of the patient from the effects of the pressure of the rubber extension which passes across the sole from side

to side. Practically the extension acts on the tissues of the thigh from the sole of the foot. (2) It confines the lower fragment in position at the outset, and it is maintained there by the upward pressure of the splint, due to the force of the elastic extension as it passes across the sole of the foot (Figs. 1 and 4). In any event, the pressure of the splint at this point can be easily regulated, either by cutting away or padding it at the border contiguous to the lower fragment. (3) It gives proper support to the lower extremity of the extending-brace of the apparatus (Fig. 4).

FIG. 1.

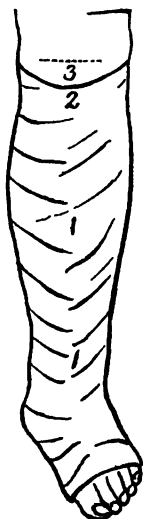


FIG. 2.

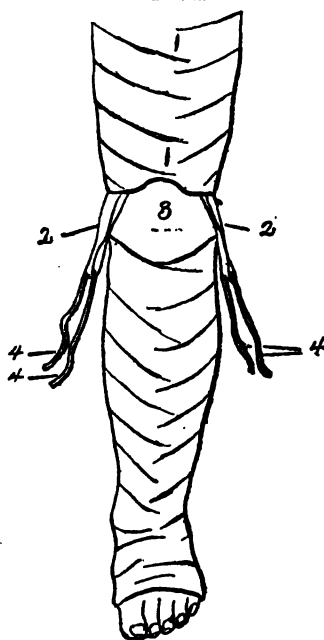


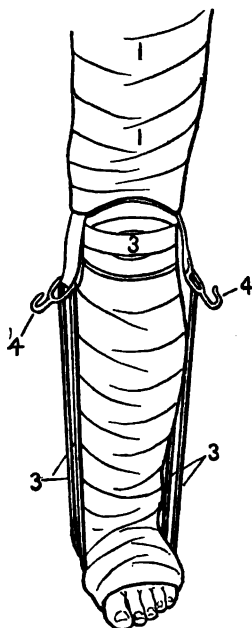
FIG. 1. 1, Plaster-of-Paris splint applied to leg; 2, upper part of splint resting against lower fragment 3; 3, lower fragment and line of fracture.

FIG. 2. 1, 1, Extension applied to thigh; 2, 2, front view of extension straps, 3, fractured patella; 4, 4, rubber extension.

SECOND STEP (Fig. 2). The measures of the second step are quite as strongly expressed by the illustration depicting it as words can define them. It consists in the application to the thigh of an adhesive plaster extension fashioned after the manner of the well-known Bucks extension, which in this instance reaches from the perineum to the upper border of the upper fragment (Fig. 2, 1, 1). The adhesive-plaster element of the Buck's extension is at that

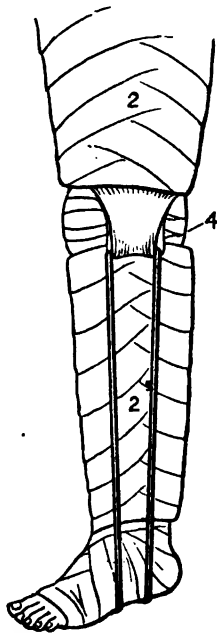
time held in place by the application of an ordinary roller, as usual. The plaster terminates in the form of loops at either side of the limb a little below the knee. The rubber extending-cords are passed through the loops (Fig. 2, 4, 4) or attached to hooks connected with them (Fig. 3, 4, 4). Moderate extension is then made on the loops by the elastic cords, to draw downward as far as proper the superficial soft parts of the thigh and the upper fragment of the patella. While extension is thus being made the thigh is encased in a plaster-of-Paris splint reaching from the upper limit of the adhesive plaster down to the upper fragment (Fig. 3, 1, 1), where it is so fashioned and padded as to hold this fragment as nearly in contact with its fellow as possible.

FIG. 3.



Front view of extension.

FIG. 4.



Side view of complete apparatus.

The objects of this plaster-of-Paris addendum are : First, to aid in holding the adhesive dressing of the thigh in as firm position as necessary; second, to afford a support for the upper end of the posterior extending-brace already mentioned; third, to coaptate the tissues of the thigh, thereby exercising a controlling influence over

muscular contraction; fourth, the making of direct extension on the quadriceps extensor, by reason of the close application of the splint to the upper fragment of the fracture and the tissues contiguous to it.

THIRD STEP. This step consists in placing the posterior support or brace in proper position and fixing it there by means of plaster-of-Paris rollers carried around it and around the upper and lower segments of the splint where they lie in contact with each other (Fig. 4). These bandages should harden quickly, and thus incorporate the posterior support at the upper and lower ends firmly with the plaster-of-Paris structure at these situations (Fig. 4, 2, 2). A strip of wood about two inches in width, an inch and a half in thickness, and of sufficient length to be firmly incorporated in the plaster-of-Paris segments of the apparatus, will answer the purpose of the posterior support (Fig. 4, 4). Two small iron rods of proper length, placed parallel with and close to each other, will meet the demands of a support.

FOURTH STEP. This step consists in drawing together the fragments of the patella as firmly as possible, either with adhesive strips obliquely applied, as is commonly done for this purpose, or the attainment of the object by means of a knee-cap suitably constructed and applied to meet the same ends. If strips of adhesive plaster be employed, they are fashioned in place by attaching them to the uncovered parts of the posterior support (Fig. 4, 4). If the knee-cap be used instead, it is applied without reference to this support. In applying the plaster strips at the line of junction of the fragments, care should be taken or the strips will be drawn between the fragments, and thus interpose an obvious obstacle to proper repair. The hamstring tendons should be properly padded, so that neither the adhesive strips, the knee-cap, nor the leather collars of the text-books can cause pressure or chafing of them. And, too, either of the above agents can be more readily and serviceably applied if the extending force be drawn aside to permit of greater room and more careful application. After the apparatus is comfortably in position, the patient is permitted to walk about with the aid of crutches, the limb meanwhile being supported in an advanced position by the agency of a sling carried beneath the sole of the foot and around the neck of the patient.

The apparatus should be made as light as is consistent with proper strength and service. In fact, it is not always necessary to imbed

the posterior support in the plaster-of-Paris by the addition of more of this material; but, instead, the posterior support may be bound in position by a firm roller bandage applied at either extremity of that structure. The adhesive plaster strips aid also in holding the posterior support in position.

I will not detain you by narrating the various changes that can be made in the utilization of individual elements of the apparatus, as these will be apparent as the circumstances suggesting them shall appear. Thus far thirteen cases of fracture of the patella have been treated under my observation by this method. The results from the treatment are equal in all respects to those obtained by other mechanical non-operative measures. The plan is presented not as a substitute for operative measures, but as an adjunct to them, as the patient can, with the appliance, be about without special danger or discomfort after wiring, etc., and closure of the wound of the soft parts. The idea is to accomplish without long confinement in bed a cure that is equal to one ordinarily attained only by the sacrifices incident to such a confinement.

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OBITUARIES.

I. BIOGRAPHICAL SKETCH OF DWIGHT MORGAN LEE, M.D., OXFORD.

BY D. A. GLEASON, M.D.,
OXFORD.

THIS eminent physician died of angina pectoris, October 5, 1895, at his home in Oxford, N. Y. Death came suddenly, yet not without warning, nor altogether unexpectedly. A last busy day in ministering to others, followed by a night of extreme suffering, and just at the hour of sunrise the call to higher service.

Dr. Lee was the only son of Rev. Hiram Wise and Miranda Bacon Lee, the great-grandson of Captain Abner Bacon, who was promoted for bravery at the battle of Bunker Hill, and served through the War of the Revolution. He was born in Georgetown, Madison County, N. Y., January 25, 1843; educated at Cincinnati Academy and Hamilton College, Clinton, N. Y., from which he received the degree of A.B. in 1863. He commenced the study of medicine with Dr. D. J. Ressegieu, in Earlville, N. Y., and afterward attended lectures at the Medical Department of the University of the City of New York and at the Albany Medical College, graduating from the latter December 27, 1864. He then entered the army and was appointed Assistant Surgeon of the Twenty-second N. Y. Volunteer Cavalry, and held that position until mustered out of service in August, 1865. In September following he located at Smithville Flats, N. Y., engaging in the duties of his profession. In March, 1867, he removed to Oxford, N. Y., where he had since resided and built up a large and lucrative practice. Of recent years he devoted his attention chiefly to diseases of the eye and ear, and was one of the foremost in that specialty in central New York. He was married to Elizabeth E. Gleason, February 14, 1866; of their four children, three survive him.

He was a frequent contributor to medical journals and societies; a member of the Medical Society of the State of New York, of the Medical Association of Central New York, and at different times Secretary and President of the Chenango County Medical Society. He had been medical director and examining physician

for the Chenango Mutual Relief Association from the granting of its charter in 1881 to his death, and was a member of the Pension Examining Board, 1882 to 1884. In the circle of fraternal societies he was widely known. He was a member of the D. K. E. College fraternity; Past Commander and Surgeon of Breed Post, G. A. R.; a charter member and Past Prophet of Kenota Tribe, I. O. R. M.; Past M. W. of Oxford Lodge, A. O. U. W.; Past Master and Past High Priest of Masonic Lodge and Chapter, and member of Commandery.

Dr. Lee was very active in all public matters and greatly interested in everything pertaining to the growth and prosperity of the community in which he lived. He was for several years Health Officer of the village, and its President by election 1881 to 1887, and again in 1892. He was also deeply interested in schools and colleges, and particularly in education for the masses. He was most active and largely instrumental in bringing about the establishment of a Union Free School in Oxford, and at the time of his death was an active member of its Board of Education, and was giving much of his time and energy to advancing its interests and placing it on a sure foundation.

He was an indefatigable worker, a man of studious habits, of extensive information, a wide knowledge of men and affairs, skilful and able in his profession, and for one so engrossed in the responsible duties of his practice had an unusual acquaintance with and interest in the general business and all affairs of State and nation. He was quick and decisive in judgment, unswerving in his loyalty to right, and having once made up his mind what was right he never hesitated or wavered, but with all the enthusiasm and force of his earnest nature met fearlessly and intelligently every opposition. He was a strong man in many ways, a man of marked personalities, a born leader; a man who made himself felt in all the walks of life, yet a man of the people; tender, sympathetic, with a kind and encouraging word for all, especially for the young, the poor and the lowly; a man whose influences will live after him, a legacy invaluable. He was a member of the Congregational Church, but cherished the spirit of fraternity toward all denominations, and contributed toward the support of all, as to every worthy cause. He has gone in the strength of his manhood, and is missed as no other one could be among the people whom for nearly thirty years he had served faithfully, and in his own home where no sacrifice was counted in ministering to its happiness.

The following from the resolutions of the Chenango County Medical Society will show how highly he was esteemed by his brother physicians :

“ In the death of Dr. D. M. Lee the medical profession feel that they have met with an irreparable loss, and sorrow greatly over his death. As valuable as were his early labors, it seemed to

us that he was now even more useful in his chosen profession, and the profession more dependent upon his skill and judgment than ever before. Aggressive yet conservative, scientific yet cautious, a most valued consultant, loyal to patient and physician alike, ever ready to respond to all professional demands upon his time and labor, or to give to others freely the benefit of his wide experience."

It may be truly said of him,

"He forgot his own soul for others,
Himself to his neighbor lending;
He found his Lord in his suffering brothers
And not in the clouds descending."

II. MEMORIAL OF JUDSON C. NELSON, M.D.,

TRUXTON.

By FRANK H. GREEN, M.D.,

ROMER.

DR. JUDSON C. NELSON was born in Danby, Tompkins County, June 3, 1824, and died in Truxton, Cortland County, July 11, 1895.

Dr. Nelson was educated in the common schools of Tioga county, and in medicine he was educated in Geneva, where he was the private pupil for three years of Dr. Thomas Spencer, then the distinguished Professor of the Institutes and Practice of Medicine in Geneva Medical College, in which institution he attended the courses of lectures, and was graduated in January, 1848. On November 20th following he married Miss Henrietta S. Walker, of Newark, Tioga County.

In March, 1848, he commenced the practice of medicine in Truxton, where he pursued his professional work with unusual success and popularity to the time of his death.

He became a permanent member of the State Medical Society in 1875, of which he was elected Vice-President in 1878, and was also a member of the Central New York Medical Association and of the Cortland County Medical Society.

At the breaking out of the War of the Rebellion in 1861, he began enlisting men in his own and adjoining towns for the Twenty-third Regiment N. Y. S. Volunteers, and then for the Seventy-sixth Regiment N. Y. S. Volunteers, to which he was commissioned as Surgeon, December 11, 1861. He served his regiment faithfully until, owing to failing health from a severe illness, due in part to severe work and also to the effects of the climate, he was obliged in July, 1862, at Fredericksburg, Va., to resign his position in

the regiment altogether and return home, as the medical officers of his division and himself believed, a confirmed invalid. After spending some time, however, at Avon Springs, he so far recovered that early in January, 1863, by special contract with the Surgeon-General, he entered upon the duties of a medical officer in the U. S. General Hospital Department of Washington, in which capacity he occupied several positions of trust and responsibility. He first served as ward physician in Trinity General Hospital until its discontinuance in April, 1863; then in Mount Pleasant General Hospital until December of that year, when he was put in charge of the Regular Army Post Hospital on the Potomac, opposite Mount Vernon, where he remained until the following April, when he was relieved by the regular surgeon of the post. He was then ordered to Finlay General Hospital and put in charge of the Surgical Wards, where a large amount of operative surgery devolved upon him and where he remained until the expiration of his term of service in November, 1864.

On returning from the hospital Dr. Nelson received the public thanks of the surgeon-in-charge for his faithful attendance to duty and from the inmates of his wards a very valuable case of amputating and general operating instruments as a testimonial of their appreciation of his services in their severe trials and afflictions.

Dr. Nelson was always a Democrat, though during a portion of the war period he voted with the Republicans. He held the office of Supervisor of his town for fifteen years or more, and in 1875 was elected Assemblyman in the New York Legislature, and again in 1882; at the latter session serving as Chairman of the Committee on Public Health, and was also on the Committee on Charitable Institutions.

On June 20, 1883, he was married, the second time, to Miss Florence Irwin Snyder, of Middleburg.

The doctor died suddenly of angina pectoris. His funeral, which occurred Sunday, July 14th, was one of the largest ever held in Cortland County, and evinced the wide esteem in which he was held by all. Besides the large representation of the medical profession, the Masonic fraternity, in which he stood high, was represented by lodges from all parts of Cortland County, as well as from adjoining counties, and the spacious house and grounds of the old homestead were filled with sorrowing friends from those in very humble walks in life to the rich and prominent. In Dr. Nelson's death a vacancy is left that will be hard to fill.

*

III. MEMORIAL OF ERASTUS D. CHIPMAN, M.D.,

SAUGERTIES.

ERASTUS DENNISON CHIPMAN was born January 23, 1835, at Hope Valley, Rhode Island, where he received his early education. For two or three years he engaged in teaching in the vicinity of Saugerties, and entered upon the study of medicine with Dr. Thomas S. Dawes, of that place. His study was further pursued at the Medical Department of the University of Buffalo, and at the Albany Medical College, from which latter institution he graduated in 1863.

He enlisted, prior to his graduation, in the volunteer army service as medical nurse, and was afterward appointed Medical Cadet; both of which positions he filled with satisfaction and credit.

Returning to Saugerties he entered on the practice of his profession with his preceptor, Dr. Dawes. He became a member of the Medical Society of the County of Ulster; after service as delegate from that Society he was elected, in 1889, a permanent member of the Medical Society of the State of New York.

He was a member of the Congregational Church and an officer of it. He held public office as Director of the village and was Postmaster for four years, under President Grant.

Dr. Chipman was faithful to every trust committed to him; he was a diligent student and a successful physician. The loyalty of his patients to him illustrates that, in the words of Dr. Pilcher, "Medical men come nearer than any other to the hearts of the people." He was an unassuming man, gentle, dignified, generous, sympathetic, and conscientious.

Never robust, he still labored unwearingly until forced to yield by disease. Two years before he died he became paralytic; he passed to his rest May 24, 1895, at the age of sixty years.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

OFFICERS OF THE SOCIETY FROM ITS ORGANIZATION TO THE PRESENT TIME.

<i>Year.</i>	<i>President.</i>	<i>Vice-President.</i>	<i>Secretary.</i>	<i>Treasurer.</i>
1807	Wm. McClelland,	Alexander Shelden,	John Stearns,	Moses Willard.
1808	Nicholas Romayne,	Alexander Shelden,	John Stearns,	James G. Graham.
1809	Nicholas Romayne,	Alexander Shelden,	John Stearns,	Andrew Proudft.
1810	Nicholas Romayne,	Alexander Shelden,	John Stearns,	Andrew Proudft.
1811	William Wilson,	Westel Willoughby,	Benj. R. Bevier,	Asa B. Sizer.
1812	John R. B. Rodgers,	Westel Willoughby,	John Stearns,	Asa B. Sizer.
1813	John R. B. Rodgers,	Joseph White,	John Stearns,	James L. Van Kleeck.
1814	John R. B. Rodgers,	Joseph White,	Ely Burritt,	James L. Van Kleeck.
1815	Joseph White,	Ely Burritt,	James Low,	Westel Willoughby.
1816	Joseph White,	Ely Burritt,	James Low,	John Stearns.
1817	John Stearns,	Henry Mitchell,	James Low,	Chas. D. Townsend.
1818	John Stearns,	Henry Mitchell,	Peter Wendell,	Chas. D. Townsend.
1819	John Stearns,	Westel Willoughby,	Chas. D. Townsend,	John Downs.
1820	John Stearns,	Westel Willoughby,	Chas. D. Townsend,	John Downs.
1821	Samuel L. Mitchell,	Peter C. Adams,	Chas. D. Townsend,	John Downs.
1822	Samuel L. Mitchell,	Thomas Fuller,	Chas. D. Townsend,	T. Romeyn Beck.
1823	Alexander Coventry,	John H. Steele,	Chas. D. Townsend,	Jonathan Eight.
1824	Alexander Coventry,	John H. Steele,	Chas. D. Townsend,	Jonathan Eight.
1825	James R. Manley,	T. Romeyn Beck,	Platt Williams,	Jonathan Eight.
1826	James R. Manley,	T. Romeyn Beck,	Platt Williams,	Jonathan Eight.
1827	T. Romeyn Beck,	Laurens Hull,	Platt Williams,	Jonathan Eight.
1828	T. Romeyn Beck,	Laurens Hull,	Platt Williams,	Jonathan Eight.
1829	T. Romeyn Beck,	Henry Mitchell,	Joel A. Wing,	Jonathan Eight.
1830	Jonathan Eight,	Henry Mitchell,	Joel A. Wing,	Platt Williams.
1831	Jonathan Eight,	Thomas Spencer,	Joel A. Wing,	Platt Williams.
1832	Thomas Spencer,	James McNaughton,	Joel A. Wing,	Platt Williams.
1833	Thomas Spencer,	James McNaughton,	Joel A. Wing,	Platt Williams.
1834	John H. Steele,	James McNaughton,	Joel A. Wing,	Platt Williams.
1835	John H. Steele,	James McNaughton,	Joel A. Wing,	Platt Williams.
1836	James McNaughton,	Samuel White,	Joel A. Wing,	Platt Williams.
1837	James McNaughton,	Samuel White,	Peter Van O'Linda,	Platt Williams.
1838	Laurens Hull,	Sumner Ely,	Peter Van O'Linda,	Platt Williams.
1839	Laurens Hull,	Sumner Ely,	Peter Van O'Linda,	Platt Williams.
1840	Sumner Ely,	John B. Beck,	Peter Van O'Linda,	Platt Williams.
1841	John B. Beck,	William Taylor,	Peter Van O'Linda,	Platt Williams.
1842	William Taylor,	Joel A. Wing,	Peter Van O'Linda,	Platt Williams.
1843	Samuel White,	Joel A. Wing,	Peter Van O'Linda,	Platt Williams.
1844	Joel A. Wing,	Harman Van Dusen,	Peter Van O'Linda,	Platt Williams.
1845	James Webster,	Robert G. Frary,	Peter Van Buren,	Peter Van O'Linda.
1846	John McCall,	Stephen Hasbrouck,	Peter Van Buren,	Peter Van O'Linda.
1847	Thos. W. Blatchford,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1848	Alex. H. Stephens,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1849	Alex. H. Stephens,	Alex. Thompson,	Peter Van Buren,	Peter Van O'Linda.
1850	Alex. Thompson,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1851	Robert G. Frary,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.

<i>Year.</i>	<i>President.</i>	<i>Vice-President.</i>	<i>Secretary.</i>	<i>Treasurer.</i>
1852	Alonzo Clark,	Jenks S. Sprague,	Thomas Hun,	Peter Van O'Linda.
1853	Jenks S. Sprague,	Peter Van Buren,	James H. Armsby,	Peter Van O'Linda.
1854	Charles R. Coventry,	Peter Van Buren,	Howard Townsend,	Peter Van O'Linda.
1855	Frank H. Hamilton,	Thomas Hun,	Howard Townsend,	Peter Van O'Linda.
1856	Alden March,	Chas. S. Goodrich,	Howard Townsend,	J. V. P. Quackenbush.
1857	Augustus Willard,	Thos. C. Brinsmade,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1858	T. C. Brinsmade,	George W. Bradford,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1859	B. Fordyce Barker,	Daniel T. Jones,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1860	Daniel T. Jones,	Edward H. Parker,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1861	Edward H. Parker,	Andrew Van Dyck,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1862	Thomas Hun,	Daniel P. Bissell,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1863	Daniel P. Bissell,	Joel Foster,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1864	Frederick Hyde,	George J. Fisher,	Sylvcs. D. Willard,	J. V. P. Quackenbush.
1865	Henry W. Dean,	Jos. C. Hutchison,	William H. Bailey,	J. V. P. Quackenbush.
1866	Joseph C. Hutchison,	Julian T. Williams,	William H. Bailey,	J. V. P. Quackenbush.
1867	John P. Gray,	Lake I. Teft,	William H. Bailey,	J. V. P. Quackenbush.
1868	J. V. P. Quackenbush,	James P. White,	William H. Bailey,	John V. Lansing.
1869	James P. White,	George Burr,	William H. Bailey,	John V. Lansing.
1870	S. O. Vander Poel,	Gilson A. Dayton,	William H. Bailey,	John V. Lansing.
1871	William C. Wey,	Andrew F. Doolittle,	William H. Bailey,	Charles H. Porter.
1872	Cornelius R. Agnew,	B. F. Sherman,	William H. Bailey,	Charles H. Porter.
1873	Edward M. Moore,	Francis Burdick,	William H. Bailey,	Charles H. Porter.
1874	George J. Fisher,	Harvey Jewett,	William H. Bailey,	Charles H. Porter.
1875	Thos. F. Rochester,	Ellsworth Elliot,	Edward R. Hun,	Charles H. Porter.
1876	E. R. Squibb,	J. V. Kendall,	Edward R. Hun,	Charles H. Porter.
1877	J. Foster Jenkins,	A. L. Saunders,	W. Manlius Smith,	Charles H. Porter.
1878	D. B. St. John Roosa,	Judson C. Nelson,	W. Manlius Smith,	Charles H. Porter.
1879	Henry D. Didama,	Nath. C. Husted,	W. Manlius Smith,	Charles H. Porter.
1880	William H. Bailey,	Abraham Jacobi,	W. Manlius Smith,	Charles H. Porter.
1881	Abraham Jacobi,	William Govan,	W. Manlius Smith,	Charles H. Porter.
1882	Harvey Jewett,	E. D. Ferguson,	W. Manlius Smith,	Charles H. Porter.
1883	Alexander Hutchins,	H. G. P. Spencer,	W. Manlius Smith,	Charles H. Porter.
1884	B. F. Sherman,	P. R. H. Sawyer,	W. Manlius Smith,	Charles H. Porter.
1885	A. Vander Veer,	Alfred C. Post,	W. Manlius Smith,	Charles H. Porter.
1886	William S. Ely,	Sol. Van Etten,	W. Manlius Smith,	Charles H. Porter.
1887	Alfred L. Loomis,	A. M. Phelps,	W. Manlius Smith,	Charles H. Porter.
1888	Samuel B. Ward,	A. Walter Suiter,	W. Manlius Smith,	Charles H. Porter.
1889	Daniel Lewis,	Alfred Mercer,	Frederic C. Curtis,	Charles H. Porter.
1890	W. W. Potter,	L. S. Pilcher,	Frederic C. Curtis,	Charles H. Porter.
1891	A. Walter Suiter,	W. W. Crandall,	Frederic C. Curtis,	Charles H. Porter.
1892	Lewis S. Pilcher,	Henry L. Elsner,	Frederic C. Curtis,	Charles H. Porter.
1893	Herman Bendell,	C. L. Stiles,	Frederic C. Curtis,	Charles H. Porter.
1894	George Henry Fox,	Frank S. Low,	Frederic C. Curtis,	Charles H. Porter.
1895	Roswell Park,	William Maddren,	Frederic C. Curtis,	Charles H. Porter.
1896	James D. Spencer,	L. Duncan Bulkley,	Frederic C. Curtis,	Charles H. Porter.

OFFICERS, 1896.

PRESIDENT,

JAMES D. SPENCER, Watertown.

VICE-PRESIDENT,

L. DUNCAN BULKLEY, New York.

SECRETARY,

FREDERIC C. CURTIS (17 Washington Ave.), Albany.

TREASURER,

CHARLES H. PORTER (103 Lancaster Street), Albany.

MEMBERS.

I. DELEGATES FROM COUNTY MEDICAL SOCIETIES, ETC.

(By-laws, Chap. I., Sec. 2.)

Figures in parenthesis indicate when term expires.

Albany County (1897):

J. F. Barker, Albany.

C. E. Davis, "

A. MacFarlane, "

A. G. Root, "

Allegany County (1898):

H. A. Barney, Belmont.

Broome County (1898):

C. G. Wagner, Binghamton.

B. E. Radecker, Deposit.

Cattaraugus County (1897):

Wm. B. Johnson, Ellicottville.

Edward Torrey, Allegany.

Cayuga County (1897):

M. P. Conway, Auburn.

E. S. Foreman, "

Chautauqua County (1898):

H. J. Dean, Brocton.

Nelson G. Richmond, Fredonia.

Chemung County (1897):

W. E. Colegrove, Horseheads.

Chenango County (1898):

J. M. Thorp, Oxford.

Clinton County (1898):

O. A. Holcomb, Plattsburgh.

Columbia County (1898):

G. W. Rossman, Ancram.

Cortland County (1898):

Henry T. Dana, Cortland.

Delaware County (1898):

H. A. Gates, Delhi.

Dutchess County (1897):

G. Huntington, La Grangeville.

David B. Ward, Poughkeepsie.

Erie County (1898):

M. A. Crockett, Buffalo.

Franklin C. Gram, "

Wm. C. Krauss, "

C. C. Frederick, "

John H. Pryor, "

G. W. McPherson, Lancaster.

Essex County 1897:

Robert T. Saville, Mineville.

Franklin County (1898):

Alfred G. Wilding, Malone.

Fulton County (1897):

F. W. Shaffer, Gloversville.

Genesee County (1899):

Greene County (1897):

W. F. Lamont, Catskill.

Herkimer County (1898):

Charles H. Glidden, Little Falls.

Jefferson County (1897):

E. S. Willard, Watertown.

Kings County (1897):

Frank Baldwin, Brooklyn.

A. T. Bristow, "

E. H. Bartley, "

Wm. E. Butler, "

J. B. Bogart, "

George W. Brush, "

- Lawrence Coffin, Brooklyn.
 J. T. Duryea, "
 Henry A. Fairbairn, "
 Jacob Fuhs, "
 Frederick A. Jewett, "
 David F. Lucas, "
 H. C. McLean, "
 Robert J. Morrison, "
 Henry H. Morton, "
 David Myerle, "
 Charles D. Napier, "
 Wm. H. Skene, "
 J. C. Schapps, "
 J. E. Sheppard, "
 E. H. Wilson, "
Lewis County (1897):
 C. P. Kirley, Lowville.
Livingston County (1899):
 T. H. Moyer, Moscow.
Madison County (1898):
 Gilbert Birdsall, North Brook-
 field.
Monroe County (1897):
 Alfred W. Haenckell, Rochester.
 Marion Craig Potter "
 Lewis W. Rose, "
Montgomery County (1899):
 C. W. De Baun, Fonda.
New York County (1899):
 Louis F. Bishop, New York.
 Joshua L. Barton, "
 T. Passmore Berens, "
 Dillon Brown, "
 B. Farquhar Curtis, "
 E. N. Carpenter, "
 Walter Lester Carr, "
 James K. Crook, "
 Herman L. Collyer, "
 Henry S. Drayton, "
 Thomas Darlington, "
 Mathias L. Foster, "
 Henry Hall Forbes, "
 Egbert H. Grandin, "
 Henry J. Garrigues, "
 Charles L. Gibson, "
 A. H. Goelet, "
 Wm. H. Haskin, "
 Dwight W. Hunter, "
 George W. Jarman, "
 Henrietta P. Johnson, "
 Emil Mayer, "
 Grace Peckham Murray, "
 Robert Milbank, "
 Simon Marx, "
 Robert A. Murray, "
 Frederick Peterson, "
 David P. Pease, "
 William B. Pritchard, "
 A. D. Rockwell, "
 William L. Stowell, New York.
 Frank Van Fleet, "
 Richard Van Santvoord, "
 John Elmer Weeks, "
 Waldron B. Vanderpoel, "
Niagara County (1897):
 T. B. Cosford, Lockport.
 F. A. Kittinger, "
Oneida County (1899):
 D. A. Barnum, Cassville.
 J. G. Kilbourn, Utica.
 L. Swartwout, Prospect.
Onondaga County (1897):
 Thomas H. Halstead, Syracuse.
 D. H. Murray, "
 F. W. Sears, "
 F. W. Slocum, Camillus.
Ontario County (1898):
 B. C. Loveland, Clifton Springs.
Orange County (1897):
 D. T. Condict, Goshen.
 A. V. Jova, Newburgh.
 Alternates:
 A. F. Browne, Cornwall.
 D. G. Lippincott, Campbell
 Hall.
Orleans County (1899):
 George J. Lund, Medina.
Oswego County (1899):
 E. F. Marsh, Fulton.
 J. K. Stockwell, Oswego.
Otsego County (1897):
 George F. Entler, Oneonta.
Putnam County (1897):
 Austin LaMonte, Carmel.
Queens County (1897):
 C. G. J. Finn, Hempstead.
 Samuel Hendrickson, Jamaica.
 E. D. Skinner, Mineola.
Rensselaer County (1897):
 M. D. Dickinson, Troy.
 D. W. Houston, "
Richmond County (1897):
 C. W. Townsend, New Brighton.
 Alternate:
 F. De Revere, Stapleton.
Rockland County (1898):
 ————
St. Lawrence County (1898):
 J. H. Brownlow, Ogdensburgh.
 P. M. Wise, "
Saratoga County (1898):
 ————
Schenectady County (1897):
 H. V. Mynderse, Schenectady.
Schoharie County (1897):
 Abram L. Haines, Schoharie.
Schuyler County (1899):
 S. B. Allen, Burdette.

Seneca County (1899):

Henry P. Frost, Willard.

Steuben County (1897):

Chas. M. Brasted, Hornellsville.

H. M. Bourne, Corning.

Suffolk County (1898):

Samuel Blume, Riverhead.

Sullivan County (1897):

W. W. Appley, Cochection.

Tioga County (1897):

D. S. Anderson, Owego.

Tompkins County (1897):

Edward Meany, Ithaca.

Ulster County (1898):

Jacob Chambers, Kingston.

A. A. Stern, Rondout.

Warren County (1897):*Washington County* (1898):

Wm. B. Melick, Fort Edward.

Wayne County (1898):

M. A. Veeder, Lyons.

Westchester County (1897):

H. F. Hart, Shrub Oak.

Evarts M. Morrell, Yonkers.

H. E. Schmid, White Plains.

Wyoming County (1899):*Yates County* (1899):

Chas. E. Doubleday, Penn Yan.

New York Academy of Medicine (1897):

Joseph Collins, New York.

Reginald H. Sayre, "

Ralph L. Parsons, Sing Sing.

Medical Department, New York City University (1898):*Bellevue Hospital Medical College* (1898):*College of Physicians and Surgeons, New York* (1899):*New York Post-Graduate Medical School* (1899):

A. Palmer Dudley, New York.

New York Polyclinic (1897):*Long Island College Hospital* (1899):

J. H. Raymond, Brooklyn.

Medical Department, Union University (1897):

Joseph D. Craig, Albany.

Medical Department, University of Buffalo (1899):

Matthew D. Mann, Buffalo.

Medical Department, Niagara University (1899):*College of Medicine, Syracuse University* (1899):

A. Clifford Mercer, Syracuse.

Rochester Pathological Society (1899):*Medical Association of Northern New York* (1898):

H. Furness, Malone.

Utica Medical Library Association (1899):

D. C. Dye, Utica.

Elmira Academy of Medicine (1898):

G. V. R. Merrill, Elmira.

Utica Medical Club (1897):

W. A. Burgess, Utica.

Society of Physicians of Canandaigua (1899):

O. J. Hallenbeck, Canandaigua.

Practitioners' Society of Rochester (1898):

Evylin Baldwin, Rochester.

Syracuse Academy of Medicine (1899):

Arthur B. Breese, Syracuse.

Amsterdam Medical Society (1897):

D. M. McMartin, Amsterdam.

Long Island Medical Society (1897):

John O. Polak, Brooklyn.

Medical Association City Mt. Vernon and Environs (1898):

George C. Weiss, Mt. Vernon.

II. PERMANENT MEMBERS.

For regulations with regard to permanent members, their election, initiation fees, annual dues, etc., see page 2 of *Transactions*. Permanent members who neglect to pay their dues for three years are dropped from the following list till arrearages are paid. (By-laws, Chapter VI., Section 5.)

Permanent members, of the age of sixty or upward, who have been permanent members for ten years, on making application to the Secretary, the application being accompanied with the Treasurer's certificate that all dues have been paid up to that date, are placed on the list of *Retired Permanent*

Members, and are relieved from further payment of annual dues. (Chapter I., Section 4, of By-laws.) The names of Retired Permanent Members are printed in the following list in *italics*, with year of retirement :

Year of Election.			County.
1880	H. R. Ainsworth,	Addison,	Steuben
1887	C. S. Allen,	Greenbush,	Rensselaer
1885	Eli Allison,	Wayne,	Steuben
1892	Edward B. Angell,	Rochester,	Monroe
1895	C. H. Avery,	New York,	New York
1888	C. W. Arthur,	Lyon Mountain,	Clinton
1888	Moses T. Babcock,	Hammondsport,	Steuben
1888	Gorham Bacon,	New York,	New York
1858	<i>Charles G. Bacon (1884),</i>	Fulton,	Oswego
1857	<i>M. M. Bagg (1883),</i>	Utica,	Oneida
1891	F. D. Bailey,	Brooklyn,	Kings
1864	William H. Bailey,	Albany,	Albany
1896	Charles O. Baker,	Auburn,	Cayuga
1891	Lewis Balch,	Albany	Albany
1859	<i>John Ball (1883),</i>	Brooklyn,	Kings
1893	O. D. Ball,	Albany,	Albany
1895	Eveline P. Ballintine,	Rochester,	Monroe
1887	<i>N. H. Ballou (1878),</i>	Lansingburgh,	Rensselaer
1889	L. Bolton Bangs,	New York,	New York
1896	Silas J. Banker,	Fort Edward,	Washington
1867	<i>Lyman Barton (1883),</i>	Willsborough,	Essex
1884	M. L. Bates,	Canaan 4 Corners,	Columbia
1896	Guy Carlton Bayley,	Poughkeepsie,	Dutchess
1876	Eugene Beach,	Gloversville,	Fulton
1895	Albert L. Beahan,	Canandaigua,	Ontario
1895	Frank Beebe,	Johnstown,	Fulton
1866	<i>A. N. Bell (1881),</i>	Brooklyn,	Kings
1887	Herman Bendell,	Albany,	Albany
1885	John M. Bigelow,	Albany,	Albany
1896	Joseph B. Bissell,	New York,	New York
1862	<i>John Boardman (1892),</i>	Buffalo,	Erie
1896	Herman J. Boldt,	New York,	New York
1861	Reed B. Bontecou,	Troy,	Rensselaer
1896	R. Brinsmade Bontecou,	Troy,	Rensselaer
1892	Wilbur H. Booth,	Utica,	Oneida
1891	F. H. Bosworth,	New York,	New York
1888	C. W. Bourne,	Hamburg,	Erie
1892	Israel C. Bourne,	Masonville,	Delaware
1888	J. P. Boyd,	Albany,	Albany
1874	Elisha H. Bridges,	Ogdensburgh,	St. Lawrence
1894	C. W. M. Brown,	Elmira,	Chemung
1894	U. H. Brown,	Syracuse,	Onondaga
1883	A. J. Brown,	Newport,	Herkimer
1895	William Browning,	Brooklyn,	Kings
1890	Charles E. Bruce,	New York,	New York
1888	E. F. Brush,	Mt. Vernon,	Westchester
1868	<i>Israel I. Buckbee (1882),</i>	Fonda,	Montgomery
1895	A. H. Buckmaster,	New York,	New York
1887	L. Duncan Bulkley,	New York,	New York
1884	John E. Burdick,	Johnstown,	Fulton
1894	Daniel S. Burr,	Binghamton,	Broome
1876	<i>J. J. Hobart Burge (1894),</i>	Brooklyn,	Kings
1894	T. O. Burleson,	Bath,	Steuben

PERMANENT MEMBERS.

449

Year of Election.

		County.
1889	Stephen Smith Burt,	New York
1894	Glenworth R. Butler,	Kings
1892	Peter A. Callan,	New York
1885	<i>A. M. Campbell</i> (1894),	Westchester
1884	<i>H. W. Carpenter</i> (1895),	Madison
1884	<i>S. S. Cartwright</i> (1894),	Delaware
1890	Charles Cary,	Erie
1866	<i>J. E. Casey</i> (1890),	Herkimer
1896	Walter Franklin Chappell,	New York
1879	Walter B. Chase,	Kings
1895	William F. Cheesman,	Cayuga
1886	Charles H. Chubb,	Greene
1868	<i>Alonzo Churchill</i> (1884),	Utica
1889	John H. Cipperly,	Rensselaer
1893	Edward Clark,	Erie
1895	F. L. Classen,	Albany
1895	William T. Clute,	Schenectady
1854	<i>Thomas F. Cock</i> (1881),	New York
1894	Henry C. Coe,	New York
1895	Carter S. Cole,	New York
1891	Philander Collard,	Westchester
1867	<i>Darwin Colvin</i> (1884),	Wayne
1890	William J. Conklin,	Dutchess
1888	D. H. Cook,	Albany
1888	J. Leonard Corning,	New York
1891	Charles N. Cox,	Kings
1890	Herman Craft,	Ulster
1867	<i>H. S. Crandall</i> (1883),	Madison
1881	W. W. Crandall,	Allegany
1890	Floyd S. Crego,	Erie
1882	Joseph P. Creveling,	Cayuga
1891	Charles W. Crispell,	Ulster
1891	Alexander H. Crosby,	Lewis
1890	Lemuel Cross,	Schoharie
1895	William L. Cuddeback,	Orange
1890	C. M. Culver,	Albany
1889	Andrew F. Currier,	New York
1882	F. C. Curtis,	Albany
1896	Newton F. Curtis,	Westchester
1885	John G. Curtis,	New York
1896	Alexander Dallas,	New York
1894	Walter S. Daly,	Ogdensburg,
1891	Charles L. Dana,	New York
1896	Henry T. Dana,	Cortland
1890	Archibald Dann,	Rochester,
1889	Thomas S. Dawes,	Saugerties,
1891	Henry H. Dean,	Watertown,
1889	Francis Delafield,	New York
1898	W. B. DeGarmo,	New York
1894	H. B. Delatour,	Brooklyn,
1888	Charles A. Dewey,	Rochester,
1892	Charles E. Douglass,	Lowville,
1890	O. B. Douglas,	New York
1894	William E. Douglas,	Middletown,
1894	Frank F. Dow,	Rochester,
1878	H. G. Dubois,	Camden,
1896	Theodore Dunham,	New York
1896	Henry Strong Durand,	Rochester,
		Monroe

Med N Y

29

Year of Election.

County.

1896	Daniel C. Dye,	Utica,	Oneida
1886	Joseph W. Eddy,	Oswego,	Oswego
1895	George M. Edebohls,	New York,	New York
1893	John Edwards,	Gloversville,	Fulton
1870	<i>Ellsworth Elliot</i> (1887),	New York,	New York
1896	Elmore E. Elliott,	Catskill,	Greene
1892	Henry L. Elsner,	Syracuse,	Onondaga
1875	William S. Ely,	Rochester,	Monroe
1892	Z. Taylor Emory,	Brooklyn,	Kings
1871	Thomas Addis Emmet,	New York,	New York
1891	George A. Evans,	Brooklyn,	Kings
1889	Jas. D. Featherstonhaugh,	Cohoes,	Albany
1892	Mahlon Felter,	Troy,	Rensselaer
1890	E. D. Fisher,	New York,	New York
1896	Arthur Lyman Fisk,	New York,	New York
1888	Henry Flood,	Elmira,	Chemung
1888	Willis E. Ford,	Utica,	Oneida
1896	John Addison Fordyce,	New York,	New York
1889	George R. Fowler,	Brooklyn,	Kings
1882	George H. Fox,	New York,	New York
1880	N. H. Freeland,	Tarrytown,	Westchester
1862	<i>Samuel H. Freeman</i> (1886),	Albany,	Albany
1891	Crawford E. Fritts,	Hudson,	Columbia
1893	E. D. Fuller,	Utica,	Oneida
1880	P. R. Furbeck,	Gloversville,	Fulton
1885	John Gerin,	Auburn,	Cayuga
1887	Arpad G. Gerster,	New York,	New York
1884	V. P. Gibney,	New York,	New York
1893	W. M. Gibson,	Utica,	Oneida
1886	Theron Z. Gibbs,	Fort Ann,	Washington
1889	J. H. Glass,	Utica,	Oneida
1891	D. A. Gleason,	Oxford,	Chenango
1883	<i>I. N. Goff</i> (1896),	Cazenovia,	Madison
1892	D. H. Goodwillie,	New York,	New York
1896	Herman C. Gordinier,	Troy,	Rensselaer
1895	Wilmer I. Gordon,	Copake,	Columbia
1894	George Graves,	Herkimer,	Herkimer
1881	Henry Gray,	Greenwich,	Washington
1895	Landon Carter Gray,	New York,	New York
1888	Alexander Hadden,	New York,	New York
1887	William Hailes,	Albany,	Albany
1890	Charles W. Hamlin,	Middleville,	Herkimer
1889	Graeme M. Hammond,	New York,	New York
1889	H. T. Hanks,	New York,	New York
1895	Josiah Hasbrouck,	Port Ewen,	Ulster
1894	Herman E. Hayd,	Buffalo,	Erie
1880	C. R. Heaton,	Oswego,	Tioga
1889	John L. Heffron,	Syracuse,	Onondaga
1890	Neil J. Hepburn,	New York,	New York
1889	E. M. Hermance,	Yonkers,	Westchester
1892	C. B. Herrick,	Troy,	Rensselaer
1894	Wallace J. Herriman,	Rochester,	Monroe
1886	Benjamin L. Holt,	Penn Yan,	Yates
1885	H. R. Hopkins,	Buffalo,	Erie
1874	<i>B. L. Hovey</i> (1885),	Rochester,	Monroe
1891	Eugene H. Howard,	Rochester,	Monroe
1892	W. R. Howard,	Rochester,	Monroe
1886	Lucien Howe,	Buffalo,	Erie

Year of Election.

			County.
1891	John T. Howell,	Newburgh,	Orange
1896	Joseph B. Hulett,	Middletown,	Orange
1893	Henry Hun,	Albany,	Albany
1854	Thomas Hun,	Albany,	Albany
1892	Joseph H. Hunt,	Brooklyn,	Kings
1894	Joel W. Hyde,	Brooklyn,	Kings
1893	George T. Jackson,	New York,	New York
1875	Abraham Jacobi,	New York,	New York
1892	Nathan Jacobson,	Syracuse,	Onondaga
1893	W. W. Jamieson,	New Bremen,	Lewis
1893	J. M. Jenkins,	Auburn,	Cayuga
1892	D. D. Jennings,	New York,	New York
1886	Charles Jewett,	Brooklyn,	Kings
1882	Wm. H. Johnston,	Port Leyden,	Lewis
1890	Herbert G. Jones,	Utica,	Oneida
1856	James V. Kendall,	Baldwinsville,	Onondaga
1896	Judson G. Kilbourne,	Utica,	Oneida
1891	Osman F. Kinloch,	Troy,	Rensselaer
1880	Herman Knapp,	New York,	New York
1857	<i>Jonathan Kneeland (1881)</i>	South Onondaga,	Onondaga
1895	Austin La Monte,	Carmel,	Putnam
1896	Louis Nott Lanehart,	Hempstead,	Queens
1893	Horace Lathrop,	Cooperstown,	Otsego
1890	C. M. Lefler,	Gloversville,	Fulton
1893	W. H. Leonard,	Worcester,	Otsego
1875	<i>Joseph Lewi (1895),</i>	Albany,	Albany
1890	Maurice J. Lewi,	New York,	New York
1884	Daniel Lewis,	New York,	New York
1892	Samuel Lloyd,	New York,	New York
1885	J. D. Lomax,	Troy,	Rensselaer
1878	A. J. Long,	Greenwich,	Washington
1892	Eli H. Long,	Buffalo,	Erie
1882	E. H. Loughran,	Kingston,	Ulster
1871	R. Loughran,	Kingston,	Ulster
1871	Frank S. Low,	Pulaski,	Oswego
1892	George J. Lund,	Medina,	Orleans
1891	Carlos F. MacDonald,	New York,	New York
1895	Willis G. Macdonald,	Albany,	Albany
1894	Frank Madden,	Plattsburgh,	Clinton
1890	William Maddren,	Brooklyn,	Kings
1893	A. H. Mambert,	Rondout,	Ulster
1895	John Mann,	Jericho,	Queens
1891	Frank W. Marlow,	Syracuse,	Onondaga
1888	F. E. Martindale,	Port Richmond,	Richmond
1896	Charles Mason,	Peekskill,	Westchester
1889	A. Ross Mathewson,	Brooklyn,	Kings
1879	Arthur Mathewson,	Brooklyn,	Kings
1892	Charles P. McCabe,	Greenville,	Greene
1894	George M. McCombs,	Clayton,	Jefferson
1894	J. A. McCorkle,	Brooklyn,	Kings
1872	<i>Leroy McLean (1896),</i>	Troy,	Rensselaer
1895	George McNaughton,	Brooklyn,	Kings
1884	Alfred Mercer,	Syracuse,	Onondaga
1888	C. S. Merrill,	Albany,	Albany
1892	Willy Meyer,	New York,	New York
1895	Aaron B. Miller,	Syracuse,	Onondaga
1888	Lewis H. Miller,	Brooklyn,	Kings
1892	Theodore D. Mills,	Middletown,	Orange

Year of Election.

County.

1886	W. F. Mittendorf,	New York,	New York
1891	Joseph Moffatt,	Washingtonville,	Orange
1896	Edward L. Mooney,	Syracuse,	Onondaga
1896	William A. Moore,	Binghamton,	Broome
1896	John Moroney,	Elmira,	Chemung
1896	John W. Morris,	Troy,	Rensselaer
1892	Robert T. Morris,	New York,	New York
1895	Samuel R. Morrow,	Albany,	Albany
1896	J. Montgomery Mosher,	Ogdensburgh,	St. Lawrence
1894	E. W. Mulligan,	Rochester,	Monroe
1896	T. Halsted Myers,	New York,	New York
1892	Herman Mynter,	Buffalo,	Erie
1893	W. J. Nellis,	Albany,	Albany
1892	Albert S. Newcomb,	New York,	New York
1895	James E. H. Nichols,	New York,	New York
1892	T. B. Nichols,	Plattsburgh,	Clinton
1895	William P. Northrup,	New York,	New York
1870	Henry D. Noyes,	New York,	New York
1880	D. V. O'Leary,	Albany,	Albany
1890	George H. Oliver,	Dickinson Centre,	Franklin
1891	Darius S. Orton,	Northampton,	Fulton
1892	Andrew Otterson,	Brooklyn,	Kings
1890	May R. Owen,	Brooklyn,	Kings
1892	R. C. M. Page,	New York,	New York
1893	Albert H. Palmer,	Marlborough,	Ulster
1891	Henry C. Palmer,	Utica,	Oneida
1892	Roswell Park,	Buffalo,	Erie
1858	Edward H. Parker,	Poughkeepsie,	Dutchess
1895	Clair S. Parkhill,	Hornellsville,	Steuben
1863	<i>W. H. H. Parkhurst</i> (1883),	Frankfort,	Herkimer
1873	<i>John Parr</i> (1886),	Buel,	Montgomery
1887	Edward L. Partridge,	New York,	New York
1893	O. W. Peck,	Oneonta,	Otsego
1881	<i>S. H. Peck</i> (1892),	Ithaca,	Tompkins
1893	T. K. Perry,	Albany,	Albany
1891	Wendell C. Phillips,	New York,	New York
1890	Henry T. Pierce,	New York,	New York
1889	F. M. Perine,	Dansville,	Livingston
1883	A. M. Phelps,	New York,	New York
1880	Henry G. Piffard,	New York,	New York
1891	Lewis S. Pilcher,	Brooklyn,	Kings
1894	Milton G. Planck,	Schenectady,	Schenectady
1896	Warren O. Plimpton,	New York,	New York
1880	J. O. Polhemus,	Nyack,	Rockland
1893	G. P. K. Pomeroy,	Stuyvesant,	Columbia
1886	Oren D. Pomeroy,	New York,	New York
1881	Thomas R. Pooley,	New York,	New York
1869	Charles H. Porter,	Albany,	Albany
1883	W. W. Potter,	Buffalo,	Erie
1893	J. W. Poucher,	Poughkeepsie,	Dutchess
1892	Seneca D. Powell,	New York,	New York
1891	H. DeV. Pratt, Jr.,	Elmira,	Chemung
1879	Jonathan S. Prout,	Brooklyn,	Kings
1877	A. E. M. Purdy,	New York,	New York
1894	Hamilton S. Quin,	Utica,	Oneida
1896	Julius B. Ransom,	Dannemora,	Clinton
1894	C. M. Rexford,	Watertown,	Jefferson
1889	Clarence C. Rice,	New York,	New York

Year of Election.

County.

1896	De Witt C. Rodenhurst,	Philadelphia,	Jefferson
1882	J. O. Roe,	Rochester,	Monroe
1878	D. B. St. John Roosa,	New York,	New York
1887	Zotique Rousseau,	Troy,	Rensselaer
1891	Thomas E. Satterthwaite,	New York,	New York
1886	Lewis A. Sayre,	New York,	New York
1885	George Seymour,	Utica,	Oneida
1893	W. W. Seymour,	Troy,	Rensselaer
1871	B. F. Sherman,	Ogdensburg,	St. Lawrence
1884	Samuel Sherwell,	Brooklyn,	Kings
1870	George F. Shradly,	New York,	New York
1888	A. R. Simmons,	Utica,	Oneida
1893	H. Lyle Smith,	Hudson,	Columbia
1895	Judson C. Smith,	New York,	New York
1867	<i>Wm. Manlius Smith</i> (1889),	Syracuse,	Onondaga
1873	<i>H. G. P. Spencer</i> (1891),	Watertown,	Jefferson
1886	James D. Spencer,	Watertown,	Jefferson
1884	C. S. Starr,	Rochester,	Monroe
1890	B. U. Steenberg,	Albany,	Albany
1892	William Stevens,	New York,	New York
1879	C. L. Stiles,	Owego,	Tioga
1880	E. V. Stoddard,	Rochester,	Monroe
1889	Charles Stover,	Amsterdam,	Montgomery
1888	W. H. Stuart,	Norwich,	Chenango
1882	Frederic R. Sturgis,	New York,	New York
1885	A. Walter Suiter,	Herkimer,	Herkimer
1892	Peter L. Suits,	Tribe's Hill,	Montgomery
1896	Leander Swartwout,	Prospect,	Oneida
1893	Robert E. Talbot,	New York,	New York
1886	Robert Thomson,	Troy,	Rensselaer
1888	D. M. Totman,	Syracuse,	Onondaga
1896	T. Oliver Tait,	Rochester,	Monroe
1896	Wisner R. Townsend,	New York,	New York
1889	Willis G. Tucker,	Albany,	Albany
1880	R. K. Tuthill,	Poughkeepsie,	Dutchess
1892	Francis Valk,	New York,	New York
1895	T. F. C. Van Allen,	Albany,	Albany
1895	Joshua M. Van Cott,	Brooklyn,	Kings
1889	S. O. Vander Poel,	New York,	New York
1876	Albert Vander Veer,	Albany,	Albany
1886	Eugene Van Slyke,	Albany,	Albany
1892	J. S. Van Vechten,	Chateaugay,	Franklin
1895	Adam T. Van Vranken,	West Troy,	Albany
1890	W. A. Vincent,	Three-Mile Bay,	Jefferson
1896	C. A. Von Ramdohr,	New York,	New York
1892	Ralph Waldo,	New York,	New York
1886	Theodore C. Wallace,	Cambridge,	Washington
1895	John J. Walshe,	Buffalo,	Erie
1896	David B. Ward,	Poughkeepsie,	Dutchess
1873	R. H. Ward,	Troy,	Rensselaer
1894	Charles G. Ward,	Utica,	Oneida
1883	Samuel B. Ward,	Albany,	Albany
1885	John S. Warren,	New York,	New York
1883	David Webster,	New York,	New York
1895	Ernest Wende,	Buffalo,	Erie
1891	Frank E. West,	Brooklyn,	Kings
1896	George T. Wetmore,	New York,	New York
1894	Hamilton D. Wey,	Elmira,	Chemung

Year of Election.		County.
1869	William C. Wey,	Chemung
1846	<i>John H. Wheeler</i> (1883),	Greene
1889	John T. Wheeler,	Columbia
1883	J. W. Whitbeck,	Monroe
1895	George H. Whitcomb,	Washington
1887	Jarvis S. Wight,	Kings
1895	Reynold W. Wilcox,	New York
1892	Robert J. Wilding,	Franklin
1883	C. E. Willard,	Greene
1895	George O. Williams,	Chenango
1893	H. T. Williams,	Monroe
1865	<i>Julien T. Williams</i> (1880),	Chautauqua
1894	Claude Wilson,	Oneida
1895	James McF. Winfield,	Kings
1889	Gustavus S. Winston,	New York
1881	C. E. Witbeck,	Albany
1883	L. D. Witherill,	Broome
1892	G. H. Witter,	Allegany
1889	R. A. Witthaus,	New York
1895	J. Walter Wood,	Richmond
1887	W. Gill Wylie,	New York
1895	Frederick W. Zimmer,	Monroe

III. HONORARY MEMBERS.

Year of Election.		Year of Election.	
1889	Francis Bacon, New Haven, Connecticut	1886	T. Hansen, Copenhagen, Denmark
1888	B. F. Baer, Philadelphia, Pa.	1889	Reginald Harrison, Liverpool, England
1882	R. Bartholow, Philadelphia, Pa.	1860	E. Hart, London, England
1880	J. S. Billings, U. S. Army	1879	C. Heath, London, England
1862	H. Bronson, New Haven, Conn.	1894	O. E. Herrick, Grand Rapids, Michigan
1880	J. B. Brown, U. S. Army	1882	C. N. Hewitt, Red Wing, Minn.
1877	W. A. F. Brown, Dumfries, Scotland	1891	W. H. Hingston, Montreal, Canada
1886	E. N. Brush, Philadelphia, Pa.	1877	W. S. Hopkins, Vergennes, Vt.
1884	W. G. Brownson, New Canaan, Connecticut	1854	O. P. Hubbard, Hanover, New Hampshire
1881	J. C. Bucknill, London, Eng.	1857	H. J. Hunter, Sheffield, Eng.
1877	S. C. Busey, Washington, D. C.	1891	J. Nevins Hyde, Chicago, Ill.
1855	H. A. Buttolph, Short Hills, New Jersey	1870	Ralph Isham, Chicago, Ill.
1894	Arthur T. Cabot, Boston, Mass.	1863	T. Jennings, Nashville, Tenn.
1885	T. S. Clouston, Edinburgh, Scotland	1887	E. Landolt, Paris, France
1875	J. M. DaCosta, Philadelphia, Pa.	1870	H. M. Knight, Lakeville, Conn.
1866	N. S. Davis, Chicago, Ill.	1873	H. C. Lombard, Geneva, Switzerland
1892	W. E. B. Davis, Rome, Ga.	1871	W. McCollum, Brooklyn, N. Y.
1875	F. Dichiaro, Palermo, Italy	1892	Lewis S. McMurtry, Louisville, Kentucky
1863	P. W. Ellsworth, Hartford, Connecticut	1872	R. McNamara, Dublin, Ireland
1890	G. J. Engelmann, St. Louis, Missouri	1889	Howard Marsh, London, Eng.
1861	W. Frazer, Montreal, Canada	1879	L. A. Mercier, Paris, France
1887	J. A. S. Grant, Cairo, Egypt	1877	S. Weir Mitchell, Philadelphia, Pa.
1875	E. H. Gregory, St. Louis, Mo.	1891	E. E. Montgomery, Phila., Pa.
1887	A. P. Grinnell, Burlington, Vt.		

Year of Election.

1894 J. H. Packard, Phila., Pa.
 1889 Wm. Pepper, Philadelphia, Pa.
 1891 Joseph Price, Philadelphia, Pa.
 1852 Samuel S. Purple, New York
 1892 Chas. A. L. Reed, Cincinnati,
 Ohio
 1882 Sidney Ringer, London, Eng.
 1875 Benjamin W. Richardson, Lon-
 don, Eng.
 1883 C. L. Robertson, London, Eng.
 1895 Geo. H. Rohé, Catonsville, Md.
 1892 Jas. F. W. Ross, Toronto, Can.
 1889 Max Schede, Hamburg, Ger-
 many
 1888 F. J. Shepherd, Montreal, Can.
 1866 Albert Smith, Petersboro, N. H.
 1894 George M. Sternberg, Washing-
 ton, D. C.
 1860 Alfred Stillé, Philadelphia, Pa.

Year of Election.

1873 R. Stokes, Dublin, Ireland
 1894 I. S. Stone, Washington, D. C.
 1886 L. Tait, Birmingham, England
 1881 W. H. Taylor, Cincinnati, O.
 1870 W. H. Thayer, Brooklyn, N. Y.
 1875 J. M. Toner, Washington, D. C.
 1873 T. J. Turner, U. S. Navy
 1872 R. Virchow, Berlin, Germany
 1877 L. de Wecker, Paris, France
 1874 T. S. Wells, London, England
 1885 J. T. Whitaker, Cincinnati, O.
 1888 D. M. Wilcox, Farmington,
 Utah
 1891 H. C. Wood, Philadelphia, Pa.
 1862 A. Woodward, Franklin, Con-
 necticut
 1885 T. G. Wormley, Phila., Pa.
 1871 W. Worthington, W. Chester, Pa.
 1892 A. H. Wright, Toronto, Can.

MEMBERS EX-OFFICIO.

PRESIDENTS OF COUNTY MEDICAL SOCIETIES.

(By-laws; Chap. I., Sec. 4.)

"Presidents of county medical societies are, during their term of service, members *ex-officio*, with the privileges of honorary members."

Albany, Joseph D. Craig, Albany
 Allegany, C. N. Hammond, Angelica
 Broome, E. L. Smith, Binghamton
 Cattaraugus, M. C. Hawley, East
 Randolph
 Cayuga, F. H. Parker, Auburn
 Chautauqua, E. S. Rich, Kennedy
 Chemung, E. H. Wakelee, Big Flats
 Chenango, R. A. Thompson, Norwich
 Clinton, John J. Robinson, Ellen-
 burgh
 Columbia, H. Lyle Smith, Hudson
 Cortland, Asa J. White, Cortland
 Delaware, William Ormiston, Delhi
 Dutchess, J. S. Bird, Hyde Park
 Erie, Justin G. Thompson, Angola
 Essex, Lyman G. Barton, Millsbor-
 ough
 Franklin, P. F. Dolphin, Malone
 Fulton, A. C. Hagedorn, Gloversville
 Genesee,
 Greene, E. H. Merriam, Coxsackie
 Herkimer, E. H. Douglass, Little
 Falls
 Jefferson, G. H. Wood, Antwerp
 Kings, George McNaughton, Brook-
 lyn
 Lewis, F. A. Crane, Lowville
 Livingston, G. G. Jones, Genesee

Madison, John R. Eaton, Chittenango
 Monroe, Wallace Sibley, Rochester
 Montgomery, E. E. Rulison, Am-
 sterdam
 New York, Edward D. Fisher, New
 York
 Niagara, M. S. Kittinger, Lockport
 Oneida, D. C. Dye, Utica
 Onondaga, D. H. Murray, Syracuse
 Ontario, O. J. Hallenbeck, Canan-
 daigua
 Orange, John B. Hulett, Middletown
 Orleans, F. B. Storer, Holly
 Oswego, J. L. Moer, South Richland
 Otsego, J. W. Swanson, Springfield
 Centre
 Putnam, Austin La Monte, Carmel
 Queens, R. F. Macfarlane, Long Isl-
 and City
 Rensselaer, O. F. Kinloch, Troy
 Richmond, Theo. Walser, W. New
 Brighton
 Rockland, Eugene B. Laird, Haver-
 straw
 St. Lawrence, J. H. Brownlow, Og-
 densburgh
 Saratoga,
 Schenectady, D. L. Kathan, Sche-
 nectady

Schoharie, C. K. Frazier, Cobleskill	Ulster, A. A. Stern, Kingston
Schuyler, W. H. Heist, Townsend	Warren, J. H. Martine, Glens Falls
Seneca, Henry P. Frost, Willard	Washington, William B. Mellick,
Steuben, Willis S. Cobb, Corning	Fort Edward
Suffolk, J. Richard Taylor, Sag Harbor	Wayne, T. H. Hallett, Clyde
Sullivan, Charles E. Piper, Wurtsboro	Westchester, A. M. Campbell, Mt. Vernon
Tioga, C. R. Rodgers, Newark Valley	Wyoming,
Tompkins, John Winslow, Ithaca	Yates', C. M. Van Dyke, Himrods

PERSONS ELIGIBLE TO MEMBERSHIP.

I. ELIGIBLE TO PERMANENT MEMBERSHIP.

Eligibility to permanent membership is secured by service as a delegate for three years and attendance and registry as such at two annual meetings of this Society. Only members of county medical societies can become permanent members. Those eligible to permanent membership who desire to become members should make written application to the Secretary. (By-laws, Chap. I., Sec. 4, and Chap. VI., Sec. 3.)

Became eligible in 1896: L. E. Blair, H. E. Mereness, W. O. Stillman, Lorenzo Hale, Joseph D. Craig, Albany County; F. H. Parker, Cayuga County; G. V. R. Merrill, Chemung County; H. A. Gates, Delaware County; G. Huntington, Dutchess County; J. H. Pryor, Matthew D. Mann, Erie County; F. W. Shaffer, Fulton County; Henry C. McLean, John O. Polak, Kings County; Marion Craig Potter, Monroe County; Joseph D. Bryant, Egbert H. Grandin, A. Palmer Dudley, New York County; Thomas H. Halsted, F. W. Sears, F. W. Slocum, Onondaga County; Orlando J. Hallenbeck, Ontario County; C. Wilmot Townsend, Richmond County; Henry P. Frost, Seneca County; Charles M. Brasted, Steuben County; D. S. Anderson, Tioga County; Chauncey P. Biggs, Tompkins County; George C. Weiss, Westchester County.

II. ELIGIBLE TO HONORARY MEMBERSHIP.

Only physicians residents of other States or foreign countries, not exceeding six in number in one year, can be elected Honorary Members, and they must have been nominated at a previous annual meeting.

1892, J. Lee McComas, Oakland, Md.; Mordecai Price, Philadelphia, Pa.; Heneage Gibbes, Ann Arbor, Mich.; E. L. Shurly, Ann Arbor, Mich.; 1889, Lennox Browne, London, Eng.; 1887, H. C. Allchin, London, Eng.; 1880, W. Carpenter, Burlington, Vt.; 1871, J. J. H. Love, Montclair, N. J.; 1868, W. Livingston, St. Johns, N. B.; 1863, H. G. Stevens, St. Albans, Vt.; Ralph Deming, Litchfield, Conn.

COUNTY MEDICAL SOCIETIES.

MEDICAL SOCIETY OF THE COUNTY OF ALBANY.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in May; semi-annual, second Tuesday in October. Stated meetings are held Wednesday evening at Alumni Hall, Albany Medical College, at least once a month, from October to May.

Officers. (May, 1896.)

Joseph D. Craig, *President*.
Chas. H. Moore, *Secretary*.

Lansing B. Winne, *Vice-President*.
W. H. Happel, *Treasurer*.

Censors: H. Bendell,
T. F. C. Van Allen,

F. C. Curtis, L. Le Brun,
C. F. Theisen.

Delegates to State Medical Society: A. G. Root,
C. E. Davis,

J. F. Barker,
A. MacFarlane.

Members.

(Where the town is not mentioned Albany is to be understood.)

H. C. Abrams, Newtonville
J. L. Archambeault, Cohoes
Robert Babcock, 10 Lancaster st
Theodore P. Bailey, 95 Eagle st
Wm. H. Bailey, 1 Washington av
Lewis Balch, 14 Washington av
O. D. Ball, 691 Broadway
James F. Barker, 54 Clinton av
E. A. Bartlett, 20 S. Hawk st
E. J. Bedell, Becker's Corners
Herman Bendell, 178 State st
J. M. Bigelow, 54 Eagle st
L. E. Blair, 204 State st
J. H. Blatner, 132 Hudson av
James P. Boyd, 152 Washington av
A. S. Capron, 90 Hudson av
T. L. Carroll, 297 Lark st
Daniel C. Case, Slingerlands
H. S. Case, 136 Madison av
F. L. Classen, 34 Trinity place
E. V. Colbert, 64 Hudson av
D. H. Cook, 264 Clinton av
Joseph D. Craig, 12 Ten Broeck st
C. M. Culver, 36 Eagle st
F. C. Curtis, 17 Washington av
C. E. Davis, 91½ Hudson av
G. R. DeSilva, Preston Hollow

M. J. Dwyer, 268 Hamilton st
Noah L. Eastman, 427 Clinton av
J. D. Featherstonhaugh, Cohoes
S. H. Freeman, 77 Columbia st
Wm. H. George, 27 Eagle st
W. I. Goewey, 225 Hamilton st
F. R. Greene, 542 Central av
Wm. Hailes, Jr., 197 Hamilton st
Lorenzo Hale, 50 Clinton av
W. S. Hale, 50 Clinton av
W. H. Happell, 351 S. Pearl st
J. U. Haynes, 76 Remsen st, Cohoes
John V. Hennessy, 35 Clinton av
Alfred B. Husted, State cor. Eagle st
Henry Hun, 149 Washington av
Thomas Hun, 33 Elk st
T. W. Jenkins, 66 S. Hawk st
P. J. Keegan, 48 Clinton av
W. F. Kernan, 92 Columbia st
Uriah B. La Moure, 119 N. Pearl st
Louis Le Brun, 78 S. Ferry st
M. S. Leavy, 217 Madison av
Sylvester Lefevre, Richmondville
Joseph Lewi, 94 Westerlo st
W. G. Lewi, 94 Westerlo st
G. E. Lochner, 1 S. Hawk st
C. C. McCullough, 322 S. Pearl st

W. G. Macdonald, 27 Eagle st
 A. Macfarlane, 24 S. Hawk st
 H. G. McNaughton, 3 S. Hawk st
 E. N. K. Mears, 3 Lancaster st
 H. E. Mereness, 184 State st
 C. S. Merrill, 23 Washington av
 J. D. Montmarquet, Cohoes
 C. H. Moore, 23 Washington av
 J. M. Moore, 375 Madison av
 Samuel R. Morrow, 29 S. Hawk st
 G. T. Moston, 626 Central av
 George S. Munson, 30 Eagle st
 W. J. Nellis, 210 State st
 L. H. Neuman, 159 Hudson av
 G. H. Newcomb, 106 Chestnut st
 D. V. O'Leary, 12 Ash Grove place
 G. W. Papen, 268 Madison av
 H. S. Pearse, 187 State st
 T. Kirk Perry, 174 Second st
 Samuel Peters, Cohoes
 Charles H. Porter, 103 Lancaster st
 Alonzo F. Powell, Coeymans
 Arthur G. Root, 46 Eagle st
 W. F. Robinson, 59 Washington av
 W. B. Rossman, 108 Eagle st
 Thomas A. Ryan, 27 Eagle st
 Wm. B. Sabin, West Troy
 Arthur Sautter, 44 Eagle st
 Wm. L. Schutter, 279 Clinton av

Seth G. Shanks, 547 Clinton av
 Ralph Sheldon, S. Swan st
 J. H. Skillicorn, 324 Hudson av
 R. J. Smith, 114 Jay st
 Julius B. Southworth, 47 Eagle st
 M. D. Stevenson, 51 S. Ferry st
 W. O. Stillman, 287 State st
 J. W. Swett, Jr., 390 Hamilton st
 R. H. Tedford, Jr., 124 Central av
 C. F. Theisen, 172 Washington av
 John Thompson, 5 Canal st
 T. Markley Trego, 32 Clinton av
 Willis G. Tucker, College Building
 G. L. Ullman, 92 Central av
 T. F. C. Van Allen, 48 Eagle st
 L. Van Auker, West Troy
 Albert Vander Veer, 28 Eagle st
 Howard Van Rensselaer, 123 State st
 E. Van Slyke, 57 Eagle st
 A. T. Van Vranken, West Troy
 S. B. Ward, 281 State st
 J. B. Washburne, Delmar
 G. A. Williams, 159 N. Pearl st
 James W. Wiltse, 135 N. Pearl st
 L. B. Winne, 72 Livingston av
 C. E. Witbeck, Cohoes
 Harriet A. Woodward, 42 Chestnut st
 Number of Members, 110.

Deceased: Thomas Beckett, Albany, January 8, 1896, æt. 63; Amos Fowler, Albany, October 23, 1895, æt. 75; Edwin Haines, S. Westerlo, March 19, 1896, æt. 52; Franklin Townsend, Albany, October 31, 1895, æt. 41; Felix Weidman, Westerlo, September 10, 1895, æt. 70.

MEDICAL SOCIETY OF THE COUNTY OF ALLEGANY.

(Date of organization unknown.)

MEETINGS.—Annual, second Wednesday in May; quarterly, second Wednesday in August, November, and February.

Officers. (May, 1896.)

C. N. Hammond, *President.* C. R. Spencer, *Vice-President.*

A. E. Willard, *Secretary and Treasurer.*

Attorney: J. F. Rice.

Censors: C. R. Bowen, G. E. Burdick, J. W. Collier,
 H. F. Gillett, H. A. Barney.

Committee on Hygiene: A. E. Willard, J. W. Collier, Mark Shephard.

Delegate to State Society: H. A. Barney.

Members.

Otis Allen, Cuba
 C. G. Anderson, Belmont
 E. W. Ayers, Richburg
 H. A. Barney, Belmont
 C. R. Bowen, Almond

George E. Burdick, Alfred
 O. E. Burdick, Little Genesee
 J. W. Collier, Wellsville
 F. E. Comstock, Andover
 A. M. Congdon, Cuba

H. E. Cooley, Angelica
 W. W. Crandall, Wellsville
 Dorr Cutler, Bolivar
 J. L. Cutler, Bolivar
 C. C. Deming, Friendship
 J. C. Earl, Belmont
 H. F. Gillett, Cuba
 S. W. Green, Richburg
 C. N. Hammond, Angelica
 W. I. Hewitt, Olean
 Fred. S. Koyle, Wellsville
 O. N. Latham, Bolivar
 H. H. Lyman, Fillmore
 G. C. McNett, Bath

Charles W. O'Donnel, Andover
 H. A. Place, Ceres
 H. P. Saunders, Alfred Centre
 Mark Shephard, Alfred Centre
 F. N. Smith, Allentown
 William M. Smith, Angelica
 C. R. Spencer, Angelica
 O. T. Stacey, Rochester, Monroe Co.
 T. S. Thomas, Cuba
 M. B. Titus, Whitesville
 W. F. Wells, Rushford
 A. E. Willard, Friendship
 G. H. Witter, Wellsville

Number of Members, 37.

MEDICAL SOCIETY OF THE COUNTY OF BROOME.

(Organized July 4, 1806.)

MEETINGS.—Annual, first Tuesday in October; quarterly, first Tuesday in January, April, and July.

Officers. (October, 1895.)

E. L. Smith, *President.*
 John Leverett, *Secretary.*

C. G. Wagner, *Vice-President.*
 E. H. Wells, *Treasurer.*

Censors: J. H. Chittenden, J. H. Orton, J. M. Farrington,
 R. A. Seymour, A. F. Taylor.

Delegates to State Medical Society: C. G. Wagner, B. E. Radeker.

Members.

(Where the name of the town is not given Binghamton is to be understood.)

S. P. Allen, Lestershire
 N. R. Barnes, 140 Oak st
 H. F. Beardsley, 500 Chenango st
 E. L. Bennett, 273 Chenango st
 J. W. Booth, West Colesville
 D. S. Burr, 145 Court st
 J. H. Chittenden, 51 Main st
 E. N. Christopher, Union Centre
 J. C. Comstock, 1 Lewis st
 W. W. Clark, Maine
 Dwight Dudley, Maine
 Chas. C. Eastman, Binghamton State
 Hospital
 L. O. Eastman, Union
 I. C. Edson, Windsor
 H. O. Ely, 62 Front st
 J. M. Farrington, 11 Jay st
 L. D. Farnham, 42 Main st
 F. L. Forker, 38 Fayette st
 K. C. French, Lisle
 C. W. Greene, 172 Court st
 J. D. Guy, Chenango Forks
 L. H. Hills, 3 Dwight Block
 I. A. Hix, 144 Court st
 F. P. Hough, 89½ Oak st
 H. S. Hutchinson, 259 Chenango st

J. Killen, 76 Front st
 F. D. Lamb, Halstead, Pa.
 John Leverett, cor. Chenango and
 Lewis sts
 C. C. McCullough, Harpursville
 S. F. McFarland, 76 Front st
 I. D. Meachan, Hammond Block
 F. M. Michael, 250 Washington st
 W. A. Moore, 223 Washington st
 E. Mulheron, 78 Front st
 J. G. Orton, Henry st and Prospect av
 George E. Pierson, Kirkwood
 J. F. Pratt, 41 Main st
 F. W. Putnam, 210 Vestal av
 John F. Place, Jr., 134 Court st
 L. H. Quackenbush, 26 Arthur st
 B. E. Radeker, Deposit
 C. B. Richards, 86 Front st
 Flora Ruch, Binghamton
 F. W. Sears, cor. French and Ferry
 sts
 R. A. Seymour, Whitney's Point
 F. E. Slater, 2 Lydia st
 Ed. L. Smith, 60 Carroll st
 A. F. Taylor, Castle Creek
 E. L. Teed, Lisle

J. L. Van Alstyne, 100 Hawley st	W. A. White, State Hospital
Charles G. Wagner, Binghamton	W. H. Wilson, Lestershire
State Hospital	L. D. Witherill, Union
E. H. Wells, McCall Block	Number of Members, 54.

MEDICAL SOCIETY OF THE COUNTY OF CATTARAUGUS.

MEETINGS—Annual, at Salamanca, the first Tuesday of May; quarterly, on the first Tuesday of August, November, and February.

Officers. (May, 1896.)

M. C. Hawley, *President*. Alfred W. Smallman, *Vice-President*.
F. C. Beals, *Secretary and Treasurer*.

Censors: George Lattin, Lyman L. Deck, Wm. B. Johnson.

Delegates to State Medical Societies: W. B. Johnson, Edward Torrey.

Members.

J. R. Allen, Olean	A. D. Lake, Gowanda
H. J. Ashley, Machias	George Lattin, Cattaraugus
Frank H. Bartlett, Olean	T. B. Laughlin, Olean
Fred C. Beales, Salamanca	S. B. McClure, Allegany
S. S. Bedient, Little Valley	Wm. E. McDuffee, Olean
F. P. Blair, Allegany	J. D. Maloy, Olean
J. P. Booth, Olean	O. S. Martin, Salamanca
E. R. Burdick, Olean	J. E. K. Morris, Olean
Joseph C. Clark, Olean	S. J. Mudge, Olean
J. P. Colgrove, Salamanca	J. H. Sackrider, East Randolph
J. D. V. Coon, Olean	E. M. Shaffner, Great Valley
E. M. Coss, Cattaraugus	Alfred W. Smallman, Ellicottville
Salina P. Colgrove, Salamanca	Ambrose E. Smith, Olean
W. C. Dallanbaugh, Olean	Cassor A. Smith, Farmerville
Lyman L. Deck, Salamanca	H. D. Snover, Steamburgh
John L. Eddy, Olean	E. S. Stewart, Ellicottville
F. D. Findlay, Franklinville	Ransom Terry, Ischua
Myron E. Fisher, Delevan	O. A. Tompkins, Randolph
M. C. Follet, Olean	Edward Torrey, Allegany
William Follett, Sandusky	W. H. Vincent, Hinsdale
M. C. Hawley, East Randolph	H. D. Walker, Franklinville
Wm. B. Johnson, Ellicottville	C. M. Walrath, Ellicottville
Clarence King, Machias	G. W. Winterstine, Portville
Frederick Krehbiel, Delevan	Number of Members, 47.

Deceased: Sophia B. Jones, W. Salamanca; S. V. Pool, Otto.

MEDICAL SOCIETY OF THE COUNTY OF CAYUGA.

(Organized August 7, 1806.)

MEETINGS.—Annual, second Thursday in May; semi-annual, second Thursday in November. Regular meeting the second Thursday in August and February.

Officers. (May, 1896.)

F. H. Parker, <i>President</i> .	J. O. Palmer, <i>Vice-President</i> .
F. E. O'Brien, <i>Secretary</i> .	William S. Cheesman, <i>Treasurer</i> .

Delegate to American Medical Association: John Gerin.

Delegates to State Medical Society: E. S. Foreman, M. P. Conway.

(When no town is mentioned Auburn is to be understood.)

Members.

S. E. Austin, 31 E. Genesee st	Frank Kenyon, Scipio
C. O. Baker, 65 Genesee st	Wm. R. Laird, 97 North st
M. O. Bentley, Weedsport	Charles L. Lang, Meridian
B. I. C. Buckland, Fleming	Leroy Lewis, 14 Washington st
W. S. Cheesman, 22 William st	W. O. Luce, 12 William st
George E. Clark, Skaneateles	F. E. Maine, 33 Grover st
M. P. Conway, 112 Genesee st	F. E. O'Brien, 114 Genesee st
W. T. Cox, Moravia	B. E. Osborne, 38 Fulton st
J. P. Creveling, 22 South st	Susan G. Otis, 40 South st
Robert Hill Dee, Fair Haven	J. O. Palmer, 6 William st
F. A. Dudley, Kings Ferry	F. H. Parker, 156 Genesee st
C. A. Fisher, Victory	Frank Putnam, 98 Wall st
E. S. Foreman, 55 Genesee st	Wm. J. Russell, Aurora
E. G. Fuller, Martville	Frank Ryan, Moravia
John Gerin, 68 North st	Conant Sawyer, 54 Genesee st
D. J. Gilbert, Port Byron	Frederick Sefton, 13 South st
Amelia Gilmore, 28 South st	George Slocum, Genoa
George W. Green, 45 Genesee st	O. B. Swayze, Union Springs
C. A. Groot, 52 E. Genesee st	J. D. Tripp, 163 Genesee st
A. L. Hall, Fair Haven	M. B. Van Buskirk, Aurora
W. I. Hoag, Sherwood	Shelden Voorhees, 88 North st
A. F. Hodgeman, 4 William st	J. W. Whitbeck, Cayuga
J. M. Jenkins, 162 Genesee st	D. A. White, Montezuma
Nettie E. Jenkins, 162 Genesee st	Number of Members, 47.

MEDICAL SOCIETY OF THE COUNTY OF CHAUTAUQUA.

MEETINGS.—Annual, second Tuesday in July; semi-annual, third Tuesday in December.

Officers. (July, 1895.)

E. S. Rich, *President.* Morris N. Bemus, *Vice-President.*
C. A. Ellis, *Secretary and Treasurer.*

Censors: James Murphy, A. H. Bowers, T. D. Strong.

Delegates to State Medical Society: N. G. Richmond, H. J. Dean.

Members.

Edward Ames, Kalamazoo, Mich.	H. J. Dean, Brocton
N. E. Beardsley, Dunkirk	Wm. Casper Duke, Cassadaga
M. N. Bemus, Jamestown	H. H. Eastman, Jamestown
W. M. Bemus, Jamestown	C. A. Ellis, Sherman
M. N. Benjamin, Dunkirk	G. E. Ellis, Brocton
George E. Blackham, Dunkirk	R. M. Evarts, Irving
S. N. Blanchard, Jamestown	S. E. Ford, Clymer
A. H. Bowers, Jamestown	W. J. French, Hamlet
H. J. Boyd, Ashville	Lester Gibbons, Dunkirk
J. M. Brooks, Jamestown	H. H. Glidden, Panama
John E. Ceneen, Ripley	V. M. Griswold, Frederica
M. J. Cowden, Gerry	W. M. Haynes, Sherman
H. W. Davis, Falconer	G. W. Hazletine, Jamestown

Leban Hazletine, Jamestown
 Ed. R. Hopkins, Silver Creek
 W. H. Hotchkiss, Jamestown
 J. J. Lenhart, Bemus Point
 John C. Lewis, Panama
 F. E. Lilley, Findley's Lake
 A. T. Livingston, Jamestown
 C. E. Lundgren, Jamestown
 E. C. Lyman, Jamestown
 L. P. McCray, Clymer
 G. D. Marsh, Sherman
 J. W. Morris, Jamestown
 James Murphy, Sherman
 W. T. Nash, Irving
 M. R. Palmer, Jamestown
 R. B. Parks, Jamestown
 A. J. Phillips, Bear Lake, Pa.
 P. E. Phillips, Bear Lake, Pa.
 C. J. Phillips, Jamestown
 W. A. Putnam, Westfield
 E. S. Rich, Kennedy
 N. G. Richmond, Fredonia

R. T. Rolph, Dunkirk
 H. R. Rogers, Dunkirk
 C. A. Rood, Brocton
 E. Rood, Westfield
 Artemas Ross, Clymer
 E. A. Schofield, Bemus Point
 E. M. Schofield, Jamestown
 J. J. Sharp, Silver Creek
 O. C. Shaw, Kennedy
 J. R. Smith, Conewango Valley
 George F. Smith, Sinclairville
 W. O. Smith, Falconer
 L. H. Snow, Jamestown
 T. D. Strong, Westfield
 Walter Stuart, Westfield
 B. S. Sweatland, Brocton
 C. H. Waterhouse, Sherman
 W. D. Wellman, Jamestown
 J. H. Wiggins, Jamestown
 I. C. Wilson, De Wittville
 Number of Members, 68

Deceased: H. P. Hall, Jamestown.

MEDICAL SOCIETY OF THE COUNTY OF CHEMUNG.

(Organized May 6, 1836.)

MEETINGS.—Annual, third Tuesday in May; quarterly, in August, November, and February.

Officers (1896).

E. H. Wakelee, *President*.
 J. H. Brewster, *Secretary*.

Frank W. Ross, *Vice-President*.
 G. V. R. Merrill, *Treasurer*.

Censors: T. A. Dundas,
 C. W. M. Brown,

C. L. Squire, W. C. Wey,
 Jonas Jacobs.

Delegate to State Medical Society: W. E. Colegrove.

Members.

(Where no town is mentioned Elmira is to be understood.)

F. C. Annabel, 139 E. Hudson st
 Charles E. Annabel, Pennsylvania av
 L. W. Bailey, Millport
 George M. Beard, Millport
 O. J. Bowman, Horseheads
 J. H. Brewster, 311 Grove st
 C. W. M. Brown, 311 Baldwin st
 M. M. Brown, W. Water st
 R. P. Bush, Horseheads
 Reuben R. Chilson, 610 W. Church st
 Larue Colegrove, Wellsburgh
 W. E. Colegrove, Horseheads
 E. H. Davis, 202 E. Water st
 E. G. Drake, 412 W. Church st
 T. A. Dundas, 257 Baldwin st
 John E. Eldred, 107 South Main st

W. H. Fisher, S. Main st
 F. H. Flood, 126 N. Main st
 Henry Flood, 403 Lake st
 H. H. Ford, 422 W. Church st
 H. W. Fudge, 504 Pennsylvania av
 J. W. Gee, Van Ettenville
 C. S. Gere, Chemung
 Ebenezer Gere, Chemung
 A. E. Gleason, Sanitarium
 Ira F. Hart, 306 East Church st
 C. F. Hawkins, Breesport
 J. Stewart Hill, 151 Lake st
 F. W. Huff, Wellsburgh
 Jonas Jacobs, 251 Baldwin st
 O. A. Jakeway, Breesport
 C. G. R. Jennings, 272 Baldwin st

Emma C. LeFevre, E. Church st	D. H. Reardon, 53 South Main st
W. H. Loughhead, Jr., Pine City	E. A. Reilly, Lake st
L. H. Merchant, 523 East Union	Frank W. Ross, Lake st
G. V. R. Merrill, 458 Spaulding st	N. H. Soble, 505 E. Water st
D. P. Merritt, 313 W. Clinton st	C. L. Squire, 409 E. Church st
N. S. Messenger, 1555 E. Church st	S. F. Stagg, 151 W. Third st
J. Moroney, 328 Baldwin st	E. H. Wakelee, Big Flats
J. C. O'Brien, 504 Pennsylvania av	T. A. Wales, 403 William st
Wm. H. Olmstead, Elmira	Hamilton D. Wey, 359 Main st
F. B. Parke, 304 E. Water st	William C. Wey, 359 Main st
R. B. Pratt, Baldwin and Market sts	Charles Woodward, 205 Gray st
H. DeV. Pratt, Jr., 118 Main st	J. C. Young, Elmira

Number of Members, 56.

Non-resident Members.

J. H. Cole, Gillett, Pa.	P. B. Roper, Alpine, N. Y.
H. M. Darling, Corning, N. Y.	T. S. Updegraff, Pasadena, Cal.
W. D. Davison, Canton, Pa.	C. Voorhees, Daggett's Farm, Pa.
Edward Mills, Ulster, Pa.	

Deceased: A. J. LeFevre, Elmira; B. W. Morse, Elmira.

MEDICAL SOCIETY OF THE COUNTY OF CHENANGO.

(Organized in 1806.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January 14, 1896.)

R. A. Thompson, <i>President.</i>	Vincent Burgess, <i>Vice-President.</i>
Robert H. Phelps, <i>Secretary.</i>	S. M. Hand, <i>Treasurer.</i>

Censors: (None elected.)

Delegate to State Medical Society: J. M. Thorp.

Members.

L. C. Andrews, Pitcher	J. V. Jacobs, Bainbridge
Louis P. Blair, McDonough	Reuben Jeffrey, Brooklyn
L. J. Brooks, Norwich	George D. Johnson, Greene
Vincent Burgess, Brisbin	L. M. Johnson, Greene
Luzerne Coville, Oxford	J. V. Lewis, North Norwich
De Witt C. Crumb, Otselic	F. S. Lovell, South Otselic
George Douglas, Oxford	H. C. Lyman, Sherburne
H. P. Dowe, Norwich	S. F. McFarland, Binghamton
Thomas Dwight, Preston	J. D. Mosher, Norwich
E. L. Ensign, Oxford	J. B. Noyes, New Berlin
R. D. L. Evans, Bainbridge	B. J. Ormsby, Norwich
T. B. Fernald, Norwich	Thurston G. Packer, Smyrna
H. S. Gardiner, Hamilton	L. B. Palmiter, Mt. Upton
D. A. Gleason, Oxford	R. H. Phelps, Norwich
O. A. Gorton, Sherburne	C. M. Purdy, Norwich
F. A. Greene, Oxford	B. F. Smith, Mt. Upton
J. D. Guy, Chenango Forks	H. E. Smith, Norwich
S. M. Hand, Norwich	M. E. Smith, South Edmeston
A. C. Hazard, New Berlin	M. E. Smith, Greene
Blinn A. Harris, Norwich	M. D. Spencer, Guilford
P. A. Hayes, Afton	F. A. Spooner, Sherburne
F. J. Hitchcock, Smyrna	W. H. Stuart, Norwich

R. A. Thompson, Norwich
J. M. Thorp, Oxford
L. C. Van Wagner, Sherburne
G. S. Weaver, McDonough

H. H. White, Earlville, Madison Co.
G. O. Williams, Greene
H. G. Willse, South Edmeston
Number of Members, 51.

Deceased: Dwight M. Lee, Oxford, October 5, 1895, æt. 52.

MEDICAL SOCIETY OF THE COUNTY OF CLINTON.

(Organized October 6, 1807.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in July.

Officers. (January, 1896.)

John J. Robinson, *President.* Clarkson C. Schuyler, *Vice-President.*
D. S. Kellogg, *Secretary.* T. B. Nichols, *Treasurer.*

Delegate to State Medical Society: O. A. Holcomb.

Members.

C. W. Arthur, Plattsburgh
Ethan A. Barnes, Plattsburgh
M. D. Briggs, Champlain
M. S. Carpenter, Clinton
H. E. Centre, Schuyler Falls
W. E. Clough, West Chazy
L. C. Dodge, Rouse's Point
A. W. Fairbank, Chazy
J. M. Hackett, Champlain
Charles S. Haynes, Redford
Samuel Haynes, Saranac
O. A. Holcomb, Plattsburgh
W. S. Honsinger, West Chazy
E. S. Howe, Ausable Forks
R. E. Hyde, Beekmantown
D. S. Kellogg, Plattsburgh
F. D. Kinsley, Peru
Elmer E. Larkin, Plattsburgh
G. E. Letourneau, Rouse's Point
J. H. La Rocque, Plattsburgh

E. M. Lyon, Plattsburgh
J. G. McKinney, Plattsburgh
Frank Madden, Plattsburgh
S. Mitchell, Jr., Saranac
A. E. Moody, Mooers
Sanford H. Newton, Rouse's Point
T. B. Nichols, Plattsburgh
Joseph T. Poissant, Champlain
J. B. Ransom, Dannemora
H. H. Reynolds, Ellenburgh Depot
John J. Robinson, Ellenburgh
Clarkson C. Schuyler, Plattsburgh
J. H. Smith, Plattsburgh
W. U. Taylor, Mooers
W. C. Thompson, Plattsburgh
C. B. Vaughan, Morrisville
E. L. Walker, West Chazy
D. B. Woodward, Ellenburgh
Number of Members, 36.

Honorary Members.

J. H. Bartholf, U. S. Army
F. J. Davignon, Ausable
M. F. Gavin, Boston

Philip F. Harvey, U. S. Army
Frank C. Ives, U. S. Army
H. O. Perley, U. S. Army

Deceased: W. T. Honsinger, West Chazy.

MEDICAL SOCIETY OF THE COUNTY OF COLUMBIA.

MEETINGS.—Annual, first Tuesday in May at City Hall, Hudson; semi-annual, first Tuesday in October at Chatham.

Officers. (May, 1896.)

H. Lyle Smith, *President.* John T. Wheeler, *Vice-President.*
Thomas Wilson, *Secretary and Treasurer.*

Censors: E. E. Martin, Wm. H. Stickles, C. E. Fritts,
N. H. Mesick, N. D. Guernsey.

Delegate to State Medical Society: G. W. Rossman.

Members.

J. H. Allen, Churchtown	Emmett Niver, Hillsdale
Milford L. Bates, Canaan 4 Corners	Elwood Oliver, Ancram
John C. Benham, Hudson	Wm. B. Platner, Germantown
George E. Benson, Hudson	George P. K. Pomeroy, Stuyvesant
O. Howard Bradley, Hudson	George W. Rossman, Ancram
T. J. Clelland, Lebanon	P. W. Shufelt, East Taghkanic
F. D. Clum, Cheviot	H. Lyle Smith, Hudson
F. W. Cordes, Copake	Wm. O. Smith, Germantown
Henry Cornell, Hillsdale	F. S. Snow, Valatie
G. H. Davis, East Chatham	Wm. H. Stickles, Philmont
P. S. Flanagan, Lebanon Springs	Wm. D. Swain, Copake
Crawford E. Fritts, Hudson	G. E. Swift, Hudson
John J. Glover, Stuyvesant Falls	A. R. Van Dusen, Claverack
N. D. Guernsey, Kinderhook	George W. Vedder, Philmont
Jacob Horton, Livingston	R. H. Vedder, Chatham Centre
H. W. Johnson, Hudson	I. C. Washburne, Chatham
George W. King, Stottsville	H. G. Westlake, Hillsdale
Martin M. Kittle, Kinderhook	John T. Wheeler, Chatham
F. T. Kunker, North Chatham	George D. Wight, Saugerties
Jordan W. Lockwood, Philmont	Thomas Wilson, Claverack
E. E. Martin, Stottsville	Richard A. Woodruff, Philmont
Nelon E. Mesick, Glenco Mills	T. F. Woodworth, Kinderhook
Robert H. Morey, Old Chatham	Number of Members, 42.

Deceased: William H. Crocker, Ancram.

MEDICAL SOCIETY OF THE COUNTY OF CORTLAND.

(Organized August 10, 1808.)

MEETINGS.—Annual, second Thursday in June; semi-annual, second Thursday in December; quarterly, second Thursdays in September and March.

Officers.

Asa J. White, *President.* Benjamin Kinyon, *Vice-President.*
Frank H. Green, *Secretary, Treasurer, and Librarian.*

Censors: F. W. Higgins, A. J. White, H. C. Hendrick,
L. T. White, C. E. Bennett.

Delegate to State Medical Society: H. T. Dana.

Members.

Jerome Angel, Cortland	E. A. Didama, Cortland
E. H. Barnes, Marathon	H. Sheldon Edson, Cortland
Charles E. Bennett, Cortland	F. H. Forshee, McGrawville
W. Y. Bliss, Tully, Onondaga Co.	S. E. Gardner, Cortland
George D. Bradford, Homer	Frank H. Green, Homer
A. S. Braman, Cuyler	M. L. Halbert, Cincinnati
Daniel W. Burdick, Syracuse, Onondaga Co.	A. L. Head, Homer
Henry T. Dana, Cortland	H. C. Hendrick, McGrawville
Med N Y	Francis W. Higgins, Cortland

J. W. Hughes, Cortland
 Herman D. Hunt, Preble
 Homer O. Jewett, Cortland
 Benj. Kinyon, Cincinnatus
 Edward M. McBirney, Willett
 Wm. A. Miles, Marathon
 W. J. Moore, Cortland
 Philip Neary, Cortland
 R. J. Perry, Harford
 Frank D. Reese, Cortland

M. R. Smith, McGrawville
 R. L. Smith, Marathon
 S. J. Sornberger, Cortland
 C. B. Trafford, Marathon
 Sumner C. Webb, Homer
 A. J. White, Cortland
 L. T. White, Homer
 J. W. Whitney, Homer
 Number of Members, 36.

Deceased : Judson C. Nelson, Truxton, July 11, 1895, æt. 71.

MEDICAL SOCIETY OF THE COUNTY OF DELAWARE.

(Organized July 1, 1866)

MEETINGS.—Annual, second Tuesday in May; semi-annual, in the Fall.

Officers.

William Ormiston, *President*. George Brinkman, *Vice-President*.
 G. C. Smith, *Secretary*. George H. Reynolds, *Treasurer*.

Censors : Thomas Wight, G. C. Smith, R. R. Thompson,
 H. A. Gates, J. N. Wright.

Delegate to State Medical Society : H. A. Gates.

Members.

G. P. Bassett, Downsview
 Howard Bell, Delhi
 I. C. Bourne, Masonville
 George H. Brinkman, Franklin
 Robert Brittain, Shavertown
 O. Bundy, Deposit, Broome Co.
 S. S. Cartwright, Roxbury
 S. E. Churchill, Stamford
 John Clark, Delhi
 Samuel A. Cottrell, Cannonsville
 William J. Cranston, Cannonsville
 S. Decker, Griffin's Corners
 Gilbert J. Dickson, Bovina
 E. W. Gallup, Stamford
 H. A. Gates, Delhi
 J. A. Gladstone, Andes
 W. D. Heimer, Hamden
 Stanton Hendricks, Croton
 C. J. Hellis, Kingston
 James A. Holley, Walton
 William Jenner, Walton
 Autin D. Johnson, East Branch
 Bruce S. Keaton, Roxbury
 Savage Knapp, East Meredith
 E. B. Lake, Meredith Hollow
 Homer M. Mace, Hobart
 D. H. Mann, Brooklyn, N. Y.
 E. D. McKenna, Walton

J. S. McLaurey, New York, N. Y.
 A. McLaury, Pleasant Valley, Dutch-
 ess Co.
 J. S. McNaught, Hobart
 J. B. Marrow, Walton
 E. A. Miller, Arena
 W. A. Minor, Bloomville
 John A. Montgomery, Walton
 G. S. Olin, Oneonta
 Wm. Ormiston, Delhi
 Gervase P. Peck, Davenport Centre
 S. C. Petingill, Hancock
 Lyman Phinney, Bovina Centre
 George H. Reynolds, Delhi
 J. S. Robinson, Prattsville
 Gilbert Scott, Davenport
 J. G. Simmons, Downville
 George C. Smith, Delhi
 William G. Smith, Walton
 E. E. Snow, Walton
 James C. Stone, Walton
 A. E. Sullard, Franklin
 R. R. Thompson, Kingston
 J. A. Webb, East Meredith
 S. J. White, Jr., Franklin
 Thomas Wight, Andes
 J. N. Wright, Grand Gorge
 Number of Members, 54.

Non-resident Members.

J. J. Buckley, Minnesota
T. M. Edwards, Iowa

F. H. McNaught, Denver, Col.
H. M. Smith, New Jersey

MEDICAL SOCIETY OF THE COUNTY OF DUTCHESS.

(Organized in 1806.)

MEETINGS.—Annual, second Wednesday in January, at Poughkeepsie;
semi-annual, second Wednesday in June.

Officers. (January, 1896.)

J. S. Bird, *President.*
J. E. Sadlier, *Secretary.*

G. H. VanWagner, *Vice-President.*
J. S. Wilson, *Treasurer.*

Censors: Alfred Hasbrouck, Robert K. Tuthill, E. H. Gerow.

Delegates to State Medical Society: David B. Ward, George Huntington.

Members.

H. E. Allison, Matteawan
B. N. Baker, Rhinebeck
Thomas E. Bamford, Hudson River
State Hospital
Edwin Barnes, Pleasant Plains
H. Weston Barnum, Poughkeepsie
H. E. Baright, Hudson River State
Hospital, Poughkeepsie
T. J. Barton, Red Hook
Guy C. Bayley, Poughkeepsie
J. S. Bird, Hyde Park
W. Langdon Bird, State Asylum,
Matteawan
Nelson Borst, Poughkeepsie
Charles E. Buffington, Pawling
E. M. Burns, Poughkeepsie
R. J. Carroll, Red Hook
G. B. Chapman, Amenia Union
J. M. Cleveland, Poughkeepsie
G. H. Coddington, Amenia
W. J. Conklin, Fishkill
S. W. M. Cornelius, Staatsburg
H. L. Cookingham, Red Hook
Isaac M. Cornell, Wappinger's Falls
J. E. Courtney, Hudson River State
Hospital
G. E. Coutant, Poughkeepsie
Wm. Cramer, Poughkeepsie
Thomas K. Cruse, Wappinger's Falls
John H. Cutter, Poughkeepsie
John H. Cutter, Jackson Corners
R. R. Daley, State Asylum, Matteawan
W. G. Dobson, Poughkeepsie
J. H. Doughty, Matteawan
H. K. Dubois, Bangall
D. W. Dumond, Millerton

J. R. English, Fishkill-on-Hudson
A. T. Fink, Freedom Plains
Charles L. Fletcher, South Dover
Elizabeth H. Gerow, Poughkeepsie
I. G. Harris, Hudson River State
Hospital
Alfred Hasbrouck, Poughkeepsie
W. Herrick, Milan
A. F. Hoag, Millerton
Frank T. Hopkins, Fishkill-on-
Hudson
Edwin L. Hoyt, Shultzville
J. M. Hunting, Stanfordville
George Huntington, LaGrangeville
C. Hustis, Matteawan
George E. Johnson, Pine Plains
M. Julian, Pleasant Valley
J. Kinkhead, Poughkeepsie
C. M. Kittredge, Fishkill-on-Hudson
D. A. Knapp, North Clove
J. T. C. Lamb, Poughkeepsie
Robert B. Lamb, Matteawan
Charles H. Langdon, Poughkeepsie
I. D. Leroy, Pleasant Valley
E. Losee, Bangall
John E. Losee, Upper Red Hook
Warren C. McFarland, Mooers Mills
I. N. Mead, Amenia
J. E. Moith, Fishkill
G. W. Murdock, Cold Spring, Put-
nam Co.
M. C. Northrup, Pleasant Valley
Edward H. Parker, Poughkeepsie
J. C. Payne, Poughkeepsie
Paul A. Philips, Hudson River State
Hospital, Poughkeepsie

H. Pierce, Pawling	C. H. Tripp, Clinton Corners
C. W. Pilgrim, Hudson River State Hospital	R. H. Tuthill, Poughkeepsie
J. O. Pingry, Mill Brook	G. A. Van Wagner, Wappinger's Falls
J. W. Poucher, Poughkeepsie	D. B. Van Wyck, Manchester Bridge
Horace R. Powell, Poughkeepsie	D. B. Ward, Poughkeepsie
Churchill A. Pritchard, Tivoli	W. S. Watson, Matteawan
M. T. Pultz, Stamfordville	G. M. Wellman, Dover Plains
Emma Putnam, Hudson River State Hospital, Poughkeepsie	Howell White, Fishkill
L. E. Rockwell, Amenia	H. C. Wilbur, Pine Plains
Selwyn A. Russell, Poughkeepsie	Frank Williams, Hudson River State Hospital, Poughkeepsie
J. E. Sadlier, Poughkeepsie	George H. Williams, Fishkill-on-Hudson
D. W. Sheedy, Poughkeepsie	P. T. Williamson, Poughkeepsie
J. Sprutling, State Asylum for Insane Criminals, Matteawan	J. P. Wilson, Poughkeepsie
L. A. Sutton, East Fishkill	J. S. Wilson, Poughkeepsie
Elizabeth Thelberg, Poughkeepsie	L. C. Wood, Wappinger's Falls
C. H. Thompson, Fishkill	W. C. Wright, Matteawan
Leon Tice, Rhinebeck	J. Young, Fishkill-on-Hudson
	Number of Members, 99.

Honorary Members.

Edward J. Bermingham, New York	Austin La Monte, Carmel
R. Deming, Sharon, Conn.	G. W. Murdock, Cold Spring
H. Fountain, Yorktown	R. F. Weir, New York
W. H. Helm, Sing Sing	N. W. Wheeler, Patterson
Samuel E. Milliken, New York	

Deceased: Thomas Hammond, Dover Plains, December 27, 1895, æt. 73 ;
R. C. Van Wyck, Hopewell Junction, January 29, 1896, æt. 52.

MEDICAL SOCIETY OF THE COUNTY OF ERIE.

MEETINGS.—Annual, second Tuesday in January ; semi-annual, second Tuesday in June.

Officers. (January, 1896.)

J. G. Thompson, <i>President.</i>	H. R. Hopkins, <i>Vice-President.</i>
Franklin C. Gram, <i>Secretary.</i>	Edward Clark, <i>Treasurer.</i>
Wm. C. Callanan, <i>Librarian.</i>	

<i>Censors:</i> J. B. Coakley,	Henry Lapp,	B. G. Long,
M. Hartwig,	F. T. Metcalf.	

Delegates to State Medical Society: W. C. Krauss, John H. Pryor,
M. A. Crockett, F. C. Gram, C. C. Frederick, G. W. McPherson.

Membership Committee: J. M. Johnson, Geo. W. McPherson, H. E. Hayd.

Members.

(Where no town is mentioned Buffalo is to be understood.)

Frank W. Abbott, 223 Franklin st	Stanley C. Babcock, 2319 Main st
George Abbott, Hamburg	John E. Bacon, 149 Franklin st
Arthur B. Allen, 950 Fillmore av	Wm. H. Baker, Williamsville
Thomas G. Allen, 419 Elk st	Lucius L. Ball, 190 Dearborn st
Wm. A. P. Andrews, 614 Jefferson st	Edward H. Ballou, Gardenville
J. Stone Armstrong, 195 14th st	Rollin L. Banta, 358 S. Division st
Chas. H. W. Auel, 277 High st	Westervelt Banta, 407 Perry st

Edwin R. Barnes, 1258 West av
 William C. Barrett, 208 Franklin st
 T. L. Barry, Willink
 F. W. Bartlett, 523 Delaware av
 Bernard Bartow, Delaware av
 A. W. Bales, 278 Genesee st
 L. A. Benedict, 126 N. Pearl st
 A. G. Bennett, 90 W. Chippewa st
 Henry G. Bentz, 894 Michigan st
 W. H. Bertold, 56 Allen street
 W. F. Beutler, 649 Ellicott st
 W. D. Bidaman, 335 Connecticut st
 Henry H. Bingham, 2485 Main st
 Jay J. Birmingham, 123 Pratt st
 Elias S. Bissell, 2793 Main st
 William G. Bissell, Department of
 Health, Buffalo
 John Boardman, 210 Delaware av
 Loren F. Boies, 286 Norwood av
 John D. Bonner, 199 Franklin st
 Bentley S. Bourne, Hamburg
 Charles W. Bourne, Hamburg
 Carlos F. Bowman, Alden
 Clara E. Bowen, 1087 Lovejoy st
 F. E. L. Brecht, 361 William st
 Albert H. Briggs, 267 Hudson st
 Elmer E. Briggs, 904 Clinton st
 Mark N. Brooks, Springville
 George L. Brown, 173 Niagara st
 Ira C. Brown, 411 14th st
 Frank F. Bruso, 203 Amherst st
 Frank A. Burghardt, 632 Elm st
 Paul F. Bussman, 637 Broadway
 Henry C. Buswell, 868 Main st
 Wm. C. Callanan, 51 W. Seneca st
 Robert E. Campbell, 190 Niagara st
 Thomas B. Carpenter, Board of
 Health
 Evangeline Carroll, 285 Ashland av
 Jane W. Carroll, 288 Ashland av
 Henry T. Carter, 210 Hoyt st
 Charles Cary, 340 Delaware av
 Wm. H. Chace, 266 Connecticut st
 John S. Champlin, 1872 Niagara st
 N. Victoria Chappell, 326 W. Ferry st
 Chas. O. Chester, 438 Washington st
 Chas. P. Clark, 236 E. Eagle st
 Edward Clark, 271 Franklin st
 Horace Clark, 21 North st
 Charles A. Clements, 312 Sycamore st
 Wm. P. Clothier, 1005 Bouck st
 John P. Coakley, 339 Delaware av
 Bernard Cohn, 540 Niagara st
 A. E. Collins, 248 Dearborn st
 A. J. Colton, 151 E. Ferry st
 Chas. E. Congdon, 1034 Jefferson st
 Miles B. Cook, 105 Glenwood av
 Benjamin W. Cornwell, Buffalo
 George F. Cott, 560 Michigan st

Albert H. Crawford, 274 Swan st
 Floyd S. Crego, 469 Delaware av
 Montgomery A. Crockett, 37 Allen st
 John Cronyn, 55 W. Swan st
 John L. C. Cronyn, 51 Franklin st
 Alphonse Dagenias, 473 W. Virginia st
 Bryon H. Daggett, 258 Franklin st
 John Dambach, 417 Michigan st
 Clayton M. Daniels, 315 Jersey
 Earl G. Danser, 592 Walden av
 Lewis P. Dayton, 15 Niagara st
 L. A. Denton, 445 Franklin st
 Mary J. Denton, 445 Franklin st
 Alfred E. Diehl, 361 Pearl st
 Conrad Diehl, 32 W. Genesee st
 Elias T. Dorland, 388 Ellwood av
 L. Bradley Dorr, 300 Jefferson st
 Samuel G. Dorr, 300 Jefferson st
 Wm. Dowlmen, 536 Swan st
 J. J. Drake, 457 Breckenridge st
 Sidney A. Dunham, 72 W. Chippewa
 Thomas F. Dwyer, 89 West av
 Wesley C. Earl, 1541 Niagara st
 David C. Eisbein, 399 Broadway
 Charles P. Eller, 1440 Jefferson st
 Henry S. Ellwood, 9 W. Mohawk st
 Albert F. Erb, Clarence, N. Y.
 Clark E. Ernest, 282 W. Ferry st
 George E. Fell, 72 Niagara st
 F. H. Field, Depew
 C. G. Fisher, 159 Laurel st
 John D. Flagg, 125 E. Eagle st
 Edgar A. Forsyth, 369 West av
 Joseph Fowler, 31 Church st
 Carlton C. Frederick, 64 Richmond av
 Edward L. Frost, 489 Plymouth av
 William C. Fritz, 235 E. North st
 Maud J. Frye, 224 Allen st
 Wm. H. Gail, East Aurora
 E. J. Gilray, Erie County Hospital
 Frank M. Gipple, Bowmansville
 Jacob Goldberg, 145 Cedar st
 Sigmond Goldberg, 584 N. Division st
 John N. Goltra, 441 Elmwood av
 Franklin C. Gram, 460 Glenwood av
 H. J. Grant, 302 Bouck av
 John R. Gray, 224 Front av
 Mary T. Green, Pike, N. Y.
 Stephen S. Greene, 328 Niagara st
 De Witt C. Greene, 1215 Main st
 Joseph C. Greene, 1125 Main st
 Walter D. Greene, 385 Jersey st
 Willis G. Gregory, 530 Main st
 J. W. Grosvenor, 118 Plymouth av
 Benjamin H. Grove, 334 Pearl st
 Carl H. Guess, 73 Main st
 Adelbert G. Guamer, 802 Bailey av
 Joseph Haberstro, cor. Genesee and
 Johnson

Robert S. Hambleton, Kenmore
 Lawrence G. Hanley, 696 Seneca st
 Robert Harbenstreet, 430 Broadway
 Devillo W. Harrington, 1430 Main st
 John T. Harris, Tonawanda
 Marcell Hartwig, 38 E. Huron st
 Leon F. Harvey, 19 W. Tupper st
 John Hauenstein, 309 Elmwood av
 Herman E. Hayd, 78 Niagara st
 Geo. J. Hearne, 191 Auburn av
 George B. Hepp, 796 Towanda st
 F. E. Hill, 532 Swan st
 G. J. Himmelsbach, 137 W. Tupper st
 F. Whitehall Hinkel, 305 Delaware av
 John A. Hoffmeyer, 150 East st
 John Honsberger, 261 Elmslie st
 Henry R. Hopkins, 433 Franklin st
 Patrick H. Hourigan, 904 Clinton st
 Charles F. Howard, 1415 Main st
 Lucien Howe, 183 Delaware av
 Stephen Y. Howell, 164 Franklin st
 Burt P. Hoyer, 216 N. Division st
 F. F. Hoyer, Tonawanda
 Alvin A. Hubbell, 212 Franklin st
 Howard L. Hunt, Orchard Park
 Arthur W. Hurd, State Hospital
 Henry D. Ingraham, 405 Franklin st
 Wm. H. Jackson, Springville
 C. R. Jennings, Alden
 Wm. E. Jennings, Boston
 Carlton R. Jewett, 1299 Main st
 Charles S. Jewett, 892 Main st
 B. C. Johnson, 1315 Jefferson st
 Thomas M. Johnson, 161 E. Ferry st
 Ray H. Johnson, 180 N. Division st
 Allen A. Jones, 436 Franklin st
 H. C. Jones, 1262 Seneca st
 Andrew Kamerling, 171 Bryant st
 Hiram A. Kendall, 786 Elmwood av
 John Ketchum, 302 Hampshire st
 Walter N. Kidder, Buffalo State
 Hospital
 A. B. Knisley, 356 Swan st
 Jacob M. Kraus, E. Utica st
 Wm. C. Krauss, 382 Virginia st
 Lewis Krombein, 246 Elm st
 Julius F. Krug, 870 Broadway
 Helena Kuhlman, State Hospital
 Henry Lapp, Clarence
 Ada C. Latham, 174 Dodge st
 H. C. Leonhardt, Tonawanda
 Clarence B. Le Van, 1123 Jefferson st
 George W. T. Lewis, 318 Ashland av
 Edward Little, 161 Main st
 Benjamin G. Long, 520 Elmwood av
 Eli H. Long, 1335 Main st
 C. E. Long, 192 Richmond av
 R. H. Lonsbury, 735 Elmwood av
 Benj. L. Lothrop, 81 Breckenridge st

Thomas Lothrop, 153 Delaware av
 U. C. Lynde, 241 Swan st
 A. T. Lytle, 260 Lexington av
 Albert H. McBeth, 35 West Eagle st
 J. J. McCullough, Main & Dodge sts
 Wm. A. McFarlane, Springville
 George H. McMichael, 63 Niagara st
 George W. McPherson, Lancaster
 John D. McPherson, Akron
 Gustavus E. Mackay, 47 W. Swan st
 Matthew D. Mann, 37 Allen st
 J. Irving Marclay, 189 Franklin st
 Andrew J. Martin, Clarence
 H. G. A. Matzinger, State Hospital
 Charles S. Meahl, 84 William st
 H. Mead, 465 W. Ferry st
 John G. Meidenbauer, 204 High st
 F. T. Metcalf, 329 Franklin st
 William Meisburger, 430 Broadway
 Reuben S. Meyers, Clarence Centre
 E. J. Meyer, 1312 Main st
 Herbert Mickle, 26 Linwood av
 John Middleton, 233 Massachusetts st
 Jacob Miller, 1115 Genesee st
 John G. Miller, Lancaster
 Frederick H. Milliner, 172 Vermont st
 Edwin H. Millring, 148 Chenango st
 David A. Morrison, 662 Oak st
 F. G. Moehlen, 1266 Jefferson st
 Henry J. Mulford, Delaware av
 Henry B. Murray, Tonawanda
 Herman Mynter, 566 Delaware av
 Henry Nichell, 80 Sycamore st
 Edward C. W. O'Brien, 439 Delaware av
 A. T. O'Hara, 770 East Ferry st
 Wm. J. Packwood, 459 Genesee st
 Roswell Park, 510 Delaware av
 L. P. L. Parker, Akron
 John Parmenter, 372 Franklin st
 R. L. Patterson, 537 Franklin st
 George W. Pattison, 17 Court st
 Albert E. Persons, 228 Franklin st
 John A. Pettit, 519 Swan st
 Louis Pfandhoefer, 1023 Genesee st
 Edward N. Pfohl, 88 Niagara st
 Wm. C. Phelps, 146 Allen st
 John T. Pitkin, 629 Main st
 Gustav A. Pohl, 96 Lemon st
 Julius Pohlman, Franklin st
 James S. Porter, 289 Cedar st
 Irving W. Potter, 749 Broadway
 Julius H. Potter, 177 Dearborn st
 Samuel Potter, Lancaster
 Wm. W. Potter, 284 Franklin st
 Fred H. Powell, 179 Franklin st
 Frederick Preiss, 115 Franklin st
 John H. Pryor, 253 Allen st
 James W. Putnam, 388 Franklin st

Lillian C. Randall, 41 Otis Place
 W. Scott Renner, 361 Pearl st
 Charles J. Reynolds, 891 Genesee st
 Francis M. Rich, 284 Richmond av
 Walter J. Riehl, 158 Swan st
 Charles A. Ring, 364 Niagara st
 Wm. G. Ring, 364 Niagara st
 Wm. E. Robbins, Hamburg
 De Lancey Rochester, 469 Franklin st
 Benjamin F. Rogers, 221 Franklin st
 Reuben M. Root, 537 William st
 T. Haven Ross, 344 Ashland av
 Clinton A. Sage, 224 W. Ferry st
 James B. Samo, 34 Tracey st
 Louis Schade, 244 Goodell st
 C. A. Schladermundt, 510 William st
 Ludwig Schroeter, 529 Fillmore av
 Macy B. Searls, East Aurora
 J. F. Sell, 8 South Division st
 Thomas J. G. Sheehan, 307 Elk st
 Harriet E. Shelden, 433 Brecken-
 ridge st
 Dewitt H. Sherman, 666 Main st
 C. S. Siegfried, 280 Franklin st
 Duncan Sinclair, Tonawanda
 George H. Sisson, 187 Plymouth av
 Wm. H. Slacer, 200 Niagara st
 C. Maynard Smith, 494 Massachu-
 setts st
 Eugene A. Smith, 66 High st
 Edward T. Smith, 189 14th st
 James S. Smith, 66 High st
 Louis G. Smith, 300 Elk st
 Irving M. Snow, 371 Porter av
 Frederick H. Stanbro, Springville
 Loren H. Staples, 173 E. Ferry st
 Elmer Starr, 174 Franklin st
 Edw. T. Stevens, 440 Massachusetts st
 T. Selden Stewart, 158 15th st
 Charles G. Stockton, 436 Franklin st
 James Stoddard, 162 14th st
 Edward Storck, 220 Eagle st
 Eugene E. Storck, 510 William st
 Brayton N. Strong, Boston
 O. C. Strong, Colden
 Ransford C. Tabor, Tonawanda

Fridolin Thoma, 1072 Lovejoy st
 Otto Thoma, 1014 Genesee st
 John C. Thompson, 55 Amherst st
 Justin G. Thompson, Angola
 Frank J. Thornbury, 469 Delaware st
 Wm. H. Thornton, 570 Niagara st
 Emil S. Tobie, 41 E. Mohawk st
 H. S. Townsend, 1177 Seneca st
 Hiram P. Trull, Williamsville
 E. H. Tweedy, 394 Vermont st
 John J. Twohey, 167 E. Utica st
 C. A. Tyler, Alden
 Frank P. Vandenberg, 32 Lewis
 Block
 P. W. Van Peyma, 445 William st
 W. Van Peyma, 940 Broadway
 Frank B. Voght, 592 Sycamore st
 Charles A. Wall, 306 Hudson st
 John J. Walsh, 480 Ellicott st
 Walden M. Ward, North Collins
 Samuel H. Warren, 30 W. Genesee st
 F. L. Watkins, 13 William st
 Ernest Wende, 471 Delaware av
 Geo. W. Wende, 471 Delaware av
 Julius Wenz, Lancaster
 Geo. H. Westinghouse, 313 Fargo av
 Charles H. Wetzel, 582 Genesee st
 Isaac G. Wheeler, 191 Eagle st
 Electa B. Whipple, 491 Porter av
 John E. Whitmore, 1099 Genesee st
 J. F. Whitwell, 368 Swan st
 Herbert N. Williams, 186 Allen st
 Matthew Willoughby, 39 Franklin st
 Edw. R. Wise, Williamsville
 Albert B. Wilson, 218 Virginia st
 James P. Wilson, 867 Niagara st
 Wenceslaus Wolf, 488 Fillmore av
 Cardinal T. Woolsey, 12 S. Division st
 Wm. H. Woodbury, 991 William st
 Chas. H. Woodward, 865 Niagara st
 John W. Woodruff, 17 Unger av
 Cornelius C. Wyckoff, 482 Delaware av
 George W. York, 190 Franklin st
 Edson H. Young, 444 Elk st
 Number of Members, 332.

Deceased: M. B. Folwell, Buffalo.

MEDICAL SOCIETY OF THE COUNTY OF ESSEX.

ANNUAL MEETINGS.—Third or fourth Tuesday in May.

Officers. (May, 1896.)

Lyman G. Barton, *President.*
 A. C. Grover, *Secretary.*

C. T. Walton, *Vice-President.*
 F. S. Hallett, *Treasurer.*

Censors: A. C. Grover, Robert T. Saville, Charles T. Walton.

Delegate to State Medical Society: R. T. Saville.

Members.

Lyman Barton, Willsborough	Dudley Palmer, Schroon
Lyman G. Barton, Willsborough	W. E. Pattison, Westport
Jesse T. Braman, Wadhams Mills	Hannibal W. Rand, Keene
Benjamin W. Burland, Schenectady	Robert T. Saville, Mineville
Francis J. D'Avignon, Ausable Forks	Conant Sawyer, Auburn
E. J. Dunn, Schroon Lake	Wm. T. Sherman, Crown Point Centre
Allen C. Grover, Port Henry	Melvin H. Turner, Ticonderoga
F. S. Hallett, Elizabethtown	Chas. T. Walton, Port Henry
Edwin S. Howe, Ausable Forks	Chas. B. Warner, Port Henry
Martin J. LaBell, Lewis	Joseph Warner, Crown Point
Chas. S. McLaughlin, Ticonderoga	Rollin C. Wilcox, Ticonderoga
Albinus J. Merrill, Upper Jay	Number of Members, 23.

MEDICAL SOCIETY OF THE COUNTY OF FRANKLIN.

(Organized in 1814; reorganized in 1848.)

MEETINGS.—Annual, first Tuesday in January; semi-annual, first Tuesday in June; quarterly, first Tuesday in September.

Officers. (January, 1896.)

P. F. Dolphin, *President.* E. A. La Rocque, *Vice-President.*
R. J. Wilding, *Secretary and Treasurer.*

Censors: W. A. Atwater, W. H. Harwood, G. H. Oliver.

Delegate to State Medical Society: A. G. Wilding.

Members.

W. A. Atwater, St. Regis Falls	C. McConnell, Hogsburgh
J. O. A. Beaupre, Malone	G. H. Oliver, Dickinson Centre
L. C. Brunet, Brushton	C. E. Pearl, North Bangor
C. A. Church, Bloomingdale	H. S. Rockwood, Bombay
C. Crippen, Trout River	E. A. Rust, Moira
P. F. Dolphin, Malone	C. D. Silver, Chateaugay
H. Furness, Malone	C. Skinner, Malone
T. Gay, Malone	J. A. Smart, Fort Covington
J. A. Grant, Malone	C. B. Smith, West Bangor
W. H. Harwood, Chasm Falls	E. E. Thurber, Brainardville
G. Howe, Chateaugay	J. S. Van Vechten, Chateaugay
J. A. Johnson, Chateaugay	F. D. Whitehead, Burke
J. R. Johnson, Bangor	A. G. Wilding, Malone
E. A. La Rocque, Malone	R. J. Wilding, Malone
W. C. Mills, Chateaugay	Number of Members, 29.

Deceased: L. M. Wardner, St. Regis Falls.

MEDICAL SOCIETY OF THE COUNTY OF FULTON.

MEETINGS.—Annual, second Thursday in January; semi-annual, second Thursday in June.

Officers. (January, 1896.)

A. C. Hagedorn, *President.* M. F. Drury, *Vice-President.*
L. R. Oatman, *Secretary.* J. K. Thorne, *Treasurer.*

Censors: D. E. Still, J. E. Burdick, William Davis.

Delegate to State Medical Society: F. W. Shaffer.

Members.

Eugene Beach, Gloversville	J. W. Joslin, Johnstown
Frank Beebe, Johnstown	C. M. Lefter, Gloversville
John E. Burdick, Johnstown	C. McCulloch, Gloversville
L. J. Daily, Gloversville	L. R. Oatman, Gloversville
Wm. Davis, Gloversville	Darius S. Orton, Northampton
M. F. Drury, Broadalbin	F. W. Shaffer, Gloversville
John Edwards, Gloversville	M. Somers, Johnstown
H. C. Finch, Broadalbin	C. A. Sternberg, Gloversville
Peter R. Furbeck, Gloversville	David V. Still, Johnstown
W. S. Garnsey, Gloversville	J. K. Thorne, Gloversville
F. I. Gidley, Johnstown	C. B. Walrod, Johnstown
J. A. Hagar, Gloversville	W. C. Wood, Gloversville
A. C. Hagedorn, Gloversville	James K. Young, Johnstown
Emily Hill,	Number of Members, 28.
A. L. Johnson, Gloversville	

Deceased: J. F. Blake, Northville, May 2, 1896, æt. 76.

MEDICAL SOCIETY OF THE COUNTY OF GENESEE.

(Organized about 1811.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in January, at Batavia.

(Society at present not in active existence.)

MEDICAL SOCIETY OF THE COUNTY OF GREENE.

(Organized July, 1806; reorganized October 13, 1859.)

MEETINGS.—Annual, second Tuesday in May; semi-annual, second Tuesday in October; quarterly, second Tuesday in July and January.

Officers. (1896.)

E. H. Merriam, <i>President.</i>	F. R. Searles, <i>Vice-President.</i>
W. C. Wright, <i>Secretary.</i>	C. E. Willard, <i>Treasurer.</i>

Delegate to State Medical Society: W. F. Lamont.

Members.

Ambrose Beach, Coxsackie	Charles P. McCabe, Greenville
Charles H. Cubb, Palenville	J. H. Mead, Hunter
F. S. Cole, Cairo	Wm. H. Mead, Windham
George Conklin, Durham	E. H. Merriam, Coxsackie
F. S. Deyoe, Hunter	George H. Noble, Cairo
E. E. Elliott, Catskill	J. B. Rouse, Leeds
Nelson Fanning, Jr., Catskill	L. Safford, East Durham
Edwin L. Ford, Lexington	F. R. Searles, Hunter
Henry J. Griffin, Cairo	Robert Selden, Catskill
Nelson H. Griffin, Cairo	W. B. Shaw, New Baltimore
George Haner, Tannersville	P. J. Stanley, Windham
S. A. Holcomb, Palenville	I. T. Sutton, Prattsville
W. F. Lamont, Catskill	I. J. Van Hoesen, Medway
Howard A. Lomax, New Baltimore	Louis Van Hoesen, Coxsackie
Bradley S. McCabe, Greenville	A. W. Van Slyke, Coxsackie

W. A. Wasson, Greenville
 F. A. Wheeler, Athens
 Charles E. Willard, Catskill

W. C. Wright, Leeds
 Number of Members, 34.

Deceased: Nelson Fanning, Catskill, March 28, 1896 æt. 87.

HAMILTON COUNTY.

(Has no Medical Society.)

MEDICAL SOCIETY OF THE COUNTY OF HERKIMER.

(Organized August 5, 1806.)

MEETINGS.—Annual, first Tuesday in March at the Court-house in Herkimer; semi-annual, first Tuesday in September; quarterly, first Tuesday in June and December. The place for all meetings, except the annual, is designated at the annual meeting.

Officers. (March, 1896.)

E. H. Douglass, <i>President.</i>	W. E. Hayes, <i>Vice-President.</i>
A. Walter Suiter, <i>Secretary.</i>	George Graves, <i>Treasurer.</i>
J. H. Shaper, <i>Librarian.</i>	

Committee on Hygiene: C. W. Hamlin, S. S. Richards, J. E. Casey,
 Fred E. Easton, U. G. Williams.

Committee on Microscopy: W. D. Garlock, *Chairman.* O. H. Deck,
 A. Walter Suiter.

Delegate to State Medical Society: Charles H. Glidden.

Members.

George M. Armstrong, West Winfield	C. W. Hamlin, Middleville
F. M. Barney, Dolgeville	Frederic J. Harter, Herkimer
W. J. Brady, Little Falls	Wm. E. Hayes, Frankfort
M. W. Brown, Cedarville	J. B. Holcomb, Newport
W. W. Budlong, Frankfort	Ward E. Hunt, Little Falls
K. A. Bushnell, Little Falls	Stephen A. Ingham, Little Falls
J. E. Casey, Mohawk	Cyrus Kay, Jr., Herkimer
H. J. Christman, Columbia	G. N. Lehr, Frankfort
Fred E. Comstock, Ilion	Miles Longshore, Cold Brook
O. H. Deck, Herkimer	Adam Miller, Jordanville
D. M. Devendorf, Herkimer	S. R. Millington, Poland
Lyman C. Dexter, Newport	A. A. Moors, West Winfield
A. J. Douglass, Ilion	Irving O. Nellis, Herkimer
A. O. Douglass, Little Falls	C. W. Nichols, Fairfield
Edgar H. Douglass, Little Falls	Wm. H. H. Parkhurst, Frankfort
E. M. Draper, Ilion	Peter Pryne, Herkimer
F. E. Easton, Van Hornesville	George P. Rasbach, Mohawk
I. S. Edsall, Middleville	James I. Rasbach, Ilion
John B. Ellis, Little Falls	S. S. Richards, Frankfort
George S. Eveleth, Little Falls	John H. Shaper, Herkimer
J. D. Fitch, Mohawk	John P. Sharer, Little Falls
George Graves, Herkimer	John H. Stephens, West Winfield
Wm. D. Garlock, Little Falls	C. G. Strobel, Dolgeville
Chas. H. Glidden, Little Falls	A. Walter Suiter, Herkimer
H. H. Greene, Paine's Hollow	Edgar C. Swift, Jordanville

William Tibbitts, Newville
D. P. Van Court, Mohawk
Robert W. Warner, Ilion
U. Grant Williams, Newport

Wm. B. Woodhull, Poland
John D. Young, Starkville
Number of Members, 56.

Deceased: William Brown, Cedarville; James M. Rose, West Winfield.

MEDICAL SOCIETY OF THE COUNTY OF JEFFERSON.

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in July; quarterly, second Tuesday in April and October.

Officers. (January, 1896.)

G. H. Wood, *President.* O. C. Eastman, *Vice-President.*
F. R. Calkins, *Secretary.* J. M. Crowe, Jr., *Treasurer.*

Censors: G. M. McCombs, P. H. Johnson, M. L. Smith, G. G. Sabin.

Business Committee: J. D. Spencer, G. M. McCombs, H. H. Smith.

Delegate to State Medical Society: E. S. Willard.

Members.

Fred C. Bailey, Adams Centre
Wm. C. Bailey, Adams Centre
J. A. Barnette, Watertown
G. A. Blake, Great Bend
C. N. Bibbins, Watertown
A. J. Boyd, Watertown
A. N. Brown, Watertown
F. R. Calkins, Watertown
G. Cameron, Watertown
C. A. Catlin, Redwood
E. Chapman, Belleville
B. C. Cheeseman, Watertown
Robert Clink, Redwood
J. M. Crowe, Watertown
J. M. Crowe, Jr., Watertown
F. T. Dale, Lafargeville
H. H. Deane, Watertown
C. S. Drury, Natural Bridge
Charles Douglas, Dexter
O. C. Eastman, Watertown
E. E. Eddy, Redwood
N. D. Fergusson, Carthage
J. T. Fawkes, Omar
G. A. Foote, Dexter
S. W. Frame, Belleville
S. V. Frame, Clayton
Geo. F. Gardner, Pierrepont Manor
L. E. Gardner, Black River
A. A. Getman, Chaumont
Alfred Goss, Adams
J. C. Graham, Philadelphia
M. J. Hutchins, Redwood
H. W. Jewett, Chaumont
Edward F. Johnson, Fell's Mills
P. H. Johnson, Adams

James E. Kelsey, Theresa
H. L. Ladd, Sacketts Harbor
M. S. Lord, Sacketts Harbor
George M. McCombs, Clayton
E. R. McCreary, Watertown
G. C. Madill, Ogdensburg
Mrs. Lois Mansfield, Watertown
Thomas Masson, Cape Vincent
F. W. H. Massey, Brownville
S. L. Merrill, Carthage
A. L. Morgan, Dexter
Charles Parker, Three-Mile Bay
John Pierce, Adams
C. M. Rexford, Watertown
DeWitt C. Rodenhurst, Philadelphia
George G. Sabin, Watertown
W. H. H. Sias, Ellis Village
F. B. Smith, Watertown
H. H. Smith, Watertown
J. Monroe Smith, Watertown
M. L. Smith, Watertown
H. L. Smith, Rodman
Gordon P. Spencer, Watertown
H. G. P. Spencer, Watertown
James D. Spencer, Watertown
A. B. Stevens, Watertown
C. G. Stevens, Watertown
J. R. Sturtevant, Theresa
George E. Sylvester, Black River
J. M. Tamblin, Copenhagen
W. G. Terry, Henderson
A. S. Thompson, Ellis Village
E. W. Trowbridge, Watertown
W. A. Vincent, Three-Mile Bay
E. E. Ward, Pamela Four Corners

Lewis C. Watson, Alexandria
E. S. Willard, Watertown

J. A. Wood, Plessis
G. H. Wood, Antwerp
Number of Members, 74.

Deceased: L. G. Gifford, Watertown; C. L. Jones, Lafargeville; L. Mason, Evans Mills; Kate Parker, Watertown; Allen Smith, Watertown.

MEDICAL SOCIETY OF THE COUNTY OF KINGS.

MEETINGS.—Annual, third Tuesday in January; stated meeting, third Tuesday of other months; all meetings are held in Brooklyn, at 356 Bridge street, the permanent home of the Society. A "Journal and Reading Room" is open daily (except Sundays) from 10 A.M. to 10 P.M.; over two hundred journals are regularly on file. The library has recently been improved by the addition of several valuable works of reference and the best of the new medical monographs and text-books, and now contains more than 10,000 books and pamphlets. This Society also owns and publishes monthly *The Brooklyn Medical Journal*, which has now about 2000 subscribers.

Officers. (January, 1896.)

Geo. McNaughton, <i>President.</i>	Joseph H. Hunt, <i>Vice-President.</i>
David Myerle, <i>Secretary.</i>	Wm. C. Braislin, <i>Assistant Secretary,</i>
Chas. N. Cox, <i>Treasurer.</i>	Wm. Browning, <i>Librarian.</i>

<i>Censors:</i> W. W. Browning,	J. L. Kortright,	Joel W. Hyde,
J. M. Van Cott, Jr.,	J. M. Winfield.	

<i>Trustees:</i> Z. Taylor Emery,	Charles Jewett,	Walter B. Chase,
Frank D. West,	Calvin F. Barber.	

Delegates to State Medical Society.

George A. Brush,	Lawrence Coffin,	David Myerle,
Frank Baldwin,	Jacob Fuhs,	Charles D. Napier,
E. H. Bartley,	H. A. Fairbairn,	Robert J. Morrison,
Wm. E. Butler,	F. A. Jewett,	John C. Schapps,
A. T. Bristow,	David F. Lucas,	J. E. Sheppard,
J. B. Bogart,	H. C. McLean,	W. H. Skene,
J. T. Duryea,	H. H. Morton,	E. H. Wilson.

Members.

(Where no town is mentioned Brooklyn is to be understood.)

H. F. Adams, 9 Palmetto	H. Messenger Ayres, 91 Lafayette av
L. C. Ager, Ovington st and 4th av	E. H. Babcock, 144 Lawrence st
A. S. Ambler, Kingston av Hospital	Fred. D. Bailey, 260 Hancock st
H. A. Alderton, 138 Clinton st	E. E. Baker, 73 Ft. Greene place
Belle Voorhees Aldridge, Flatbush	Frank Baldwin, 691 Willoughby av
L. A. W. Alleman, 64 Montague st	Lemuel G. Baldwin, 164 Clinton st
S. F. Anderson, 672 Degraw st	C. F. Barber, 57 Oxford st
Lewis N. Anderson, 149 Taylor st	H. L. Bartlett, Flatbush
A. Andrew, 33 Montgomery place	E. H. Bartley, 21 Lafayette av
W. S. Applegate, Flatbush	F. E. Bass, 33 St. Felix st
A. Arbona, 146 E. New York av	W. H. Bates, 173 Remsen st
H. L. Armstrong, 135 Clinton st	H. B. Bayles, 442 9th st
H. Arrowsmith, 236 Degraw st	C. D. Beasley, 646 Marcy st
J. G. Atkinson, 257 Adelphi st	W. N. Belcher, 25 S. Portland av
Benjamin Ayres, 213 Jefferson av	L. T. Bell, 81 Vernon st

- C. N. Bellows, 442 Nostrand av
 Herman Bender, 849 Willoughby av
 W. H. Bennett, 188 6th av
 S. H. Benton, 1063 Bergen st
 W. A. Berendsohn, 142 Bergen st
 P. H. Berlenbach, 16 Suydam st
 E. S. Bishop, 99 Franklin av
 Henry M. Bishop, 338 9th st
 B. F. M. Blake, 35 Schermerhorn st
 J. A. Blake, 352 Jefferson av
 S. C. Blaisdell, 225 Roebling st
 H. D. Bliss, 23 Halsey st
 D. G. Bodkin, 296 Clinton av
 P. A. E. Boetzkes, 8602 Bay Parkway
 Arthur H. Bogart, Nostrand av and
 Hancock
 J. B. Bogart, 423 Washington av
 Seth D. Boggs, 341 Tompkins av
 G. Boucher, 229 Union st
 J. J. Bowen, 782 Hancock st
 F. W. Bowron, 259 Tompkins square
 W. P. Bowser, 506 9th st
 F. E. Boyden, Marcy av and Hart st
 J. S. Boynton, Canarsie
 Wm. C. Braislin, 217 St. James place
 W. J. Brandt, 379 Union st
 R. C. Brewster, 126 Lefferts place
 Benj. M. Briggs, 106 Willoughby av
 A. Brinkman, 176 Bergen st
 W. B. Brinsmade, 123 Joralemon st
 A. T. Bristow, 234 Clinton st
 Anna M. Brown, 976 Bedford av
 Lucy Hall Brown, 158 Montague st
 S. S. Brown, 844 Lafayette av
 Wm. Browning, 54 Lefferts place
 W. W. Browning, 155 Reid av
 A. H. Brundage, 1157 Gates av
 C. W. Bruner, 103 Wilson st
 Arthur C. Brush, 339 Lafayette av
 Geo. W. Brush, 2 Spencer place
 Harold Bryn, 598 Henry st
 Emilio Buchaca, 233 Reid av
 Thomas M. Buckley, 37 Hicks st
 Henry Bullwinkle, Madison st and
 Franklin av
 Albert C. Bunn, 464 Herkimer st
 E. S. Bunker, 178 St. John place
 H. A. Bunker, 185 6th av
 J. H. H. Burge, 132 Montague st
 P. V. Burnett, 274 Driggs st
 G. R. Butler, 229 Gates av
 Wm. E. Butler, 113 Halsey st
 John Bryne, 314 Clinton st
 S. J. Bryne, 56 7th av
 H. de H. Cameron, 237 7th av
 P. Candidus, 228 S. 9th st
 John Crean Cardwell, 475 Halsey st
 W. R. A. Carley, 1120 Bushwick av
 James L. Carney, 44 4th av
 E. J. Carolan, 856 Bedford av
 A. W. Catlin, 207 Greene av
 W. L. Chapman, 518 Monroe st
 Walter B. Chase, 645 Marcy av
 E. S. Chick, 303 Greene av
 S. B. Childs, 498 Classon av
 S. Church, 236 Clinton st
 Frank H. Clark, 690 Greene av
 Joseph E. Clark, 340 Clinton st
 Charles E. Clark, 259 Lorimer st
 Stanley G. Clarke, 694 Halsey st
 J. M. Clayland, 466 Hart st
 H. L. Cochran, 141 Clinton st
 Lawrence Coffin, 516 Bedford av
 H. B. Cogswell, 560 Greene av
 Burnett C. Collins, 1263 Dean st
 F. H. Colton, 136 Montague st
 Henry Conkling, 143 Remsen st
 J. T. Conkling, 143 Remsen st
 C. D. Cook, 133 Pacific st
 W. J. Corcoran, 301 Clinton st
 E. E. Cornwall, 146 Herkimer st
 Robert E. Coughlin, 237 47th st
 J. H. Coverly, 191 Washington Park
 Charles N. Cox, 168 Halsey st
 Thomas C. Craig, U. S. Navy Yard,
 Brooklyn
 Louis F. Criado, 147 Ft. Green place
 E. P. Crowell, 69 Decatur st
 Wm. J. Cruikshank, 5 Lafayette av
 Albert M. Curry, 493 Classon av
 G. W. Cushing, 221 Schermerhorn st
 W. R. J. Dalton, 708 Halsey st
 W. H. Davis, 372 Stuyvesant av
 E. A. Day, 306 Sumner av
 Wm. V. Dee, 290 Bridge st
 Joseph F. de Castro, 553 Henry st
 H. P. de Forest, 582 Throop av
 H. B. de la Tour, 867 Union st
 W. A. de Long, 285 S. 2d st
 F. C. de Mund, New Utrecht
 Chas. A. H. deSzigethy, 157 Clinton st
 D. de Waltoff, 270 9th st
 John G. Dickert, 833 Bushwick av
 R. L. Dickinson, 145 Clinton st
 G. J. Dirkes, 186 S. 2d st
 H. S. Dixon, 141 Lewis av
 Thomas Dixon, 74 Sands st
 George Dominguez, 97 Second place
 James A. Donahue, 12 Underhill av
 Charles E. Dority, 411 Union st
 A. J. Dower, 380 Union st
 J. H. Droge, 8 Stuyvesant av
 G. Drury, 115 Johnson st
 W. F. Dudley, 147 Clinton st
 Z. F. Dunning, Arlington av and
 Cleveland st
 Jesse T. Duryea, 6 Caton av
 L. M. Dusseldorf, 392 Union st

Benjamin Edson, 83 St. Mark's av
 R. G. Eccles, 191 Dean st
 Edgar Eltinge, 2 Verona place
 Oscar Embden, 123 Schermerhorn st
 Z. T. Emery, 481 Washington av
 C. E. Erfstrom, 489 Atlantic av
 George A. Evans, 909 Bedford av
 H. A. Fairbairn, 249 McDonough st
 J. N. Farrar, 1271 Broadway, N. Y.
 Jennie G. Farrell, 226 E. 20th st, N. Y.
 Edward D. Ferris, 317 53d st
 G. N. Ferris, Flatbush
 M. Figuera, 12 Stuyvesant av
 J. C. Fitzsimmons, 455 Gold st
 A. F. Fitch, 14 Dodworth st
 J. W. Fleming, 379 Bedford av
 L. M. Fleming, 195 Adams st
 Thomas L. Fogarty, 167 Union and
 Hicks st
 C. B. Fowler, 752 Carroll st
 G. R. Fowler, 302 Washington av
 R. S. Fowler, 320 Washington av
 Homer E. Frazer, 29 Lafayette av
 T. R. French, 150 Joralemon st
 Wm. A. Frees, 1138 3d av
 T. Frickenstein, 110 Union av, E. D.
 Walter M. Friend, 2 First place
 J. Fuhs, 286 Jefferson av
 Frances V. C. Fuller, 110 St. James's pl
 W. F. Gardiner, 175 6th av
 S. H. Gardiner, 1085 Gates av
 John T. Gibbons, 1297 Bushwick av
 H. L. Gifford, 214 S. 4th st
 H. S. Gilbert, 311 Cumberland st
 C. P. Gildersleeve, 35 Schermerhorn av
 Wm. Gilfillan, 98 Remsen st
 Wm. J. Gilfillan, 79 Main st
 Thomas C. Giroux, 142 S. 4th st, E. D.
 John W. Glynn, 71 1st place
 John F. Golding, 365 Franklin av
 O. A. Gordon, 660 Greene av
 R. L. Graham, 74 Rush st
 Edward Grether, 184 Meserole st
 G. P. Griffing, 597 Lorimer st
 W. A. Griffith, 667 Willoughby av
 L. C. Griggs, 143 Leferts place
 H. L. Grover, 881 Quincy st
 C. E. Gunther, 151 Clinton st
 Gordon R. Hall, 26 Schermerhorn st
 J. C. Hancock, 43 Cambridge place
 J. M. Harcort, 305 Clinton st
 John Harrigan, 401 Clinton st
 A. R. Harris, 74 Sands st
 Audley Haslett, 115 Clinton st
 E. A. Hatch, 201 Hart st
 G. R. Hawley, 291 Gates av
 W. H. Haynes, 1704 Dean st
 A. S. Heath, 205 Patchen av
 T. B. Hegeman, 414 2d st

Skidmore Hendrickson, 636 St.
 Mark's av
 C. C. Henry, 56 Clark st
 C. T. Hepp, 398 Graham av
 J. Williams Henry, 232 Mason st
 C. J. Hethesheimer, 313 Wyckoff av
 Wm. B. Hewett, 80 St. Mark's av
 E. P. Hickok, 114 Pennsylvania av
 J. O. F. Hill, Coney Island
 O. H. Hoffman, 483 9th st
 C. N. Hoagland, 410 Clinton av
 F. C. Holden, 877 Union st
 D. C. Holton, 601 Leonard st
 H. N. Hoople, 35 Kingston av
 Geo. G. Hopkins, 350 Washington av
 E. H. Hoxsie, 1 Hart st
 H. M. Hufnagle, 208 Park av
 J. H. Hunt, 1085 Bedford av
 Wm. L. Hunter, 462 Adelphi st
 Alex. Hutchins, 796 DeKalb av
 W. M. Hutchinson, 207 Clinton st
 C. R. Hyde, 215 Schermerhorn st
 Joel W. Hyde, 215 Schermerhorn st
 J. W. Ingalls, 131 Lewis av
 A. C. Jacobson, 93 Johnson st
 Reuben Jeffery, 87 S. 9th st
 J. A. Jenkins, 217 Jefferson av
 Charles Jewett, 330 Clinton av
 F. A. Jewett, 282 Hancock st
 Harold F. Jewett, 330 Clinton av
 Oswald Joerg, 12 Schermerhorn st
 C. H. Johnson, 207 Green av
 J. G. Johnson, 153 Joralemon st
 Florence L. Jones, 376 Putnam av
 T. U. Joyce, 745 Union st
 A. M. Judd, 95 Sixth av
 J. A. Kene, 169 Willoughby st
 F. L. Kennedy, 492 Greene av
 J. C. Kennedy, 762 Willoughby av
 C. D. Kevin, 771 Monroe st
 J. R. Kevin, 968 Bedford av
 F. P. Keyes, 77 Hanson place
 James J. Keyes, 236 17th st
 P. E. Kidd, 179 Willoughby av
 W. Kinne, 46 4th av
 J. S. King, 823 DeKalb av
 S. T. King, 34 Greene av
 Charles G. Koehler, 313 S. 5th st
 W. F. Koerner, 309 Driggs av
 Hugo Koethe, 732 Flushing av
 J. K. Kolle, 701 Fourth av
 J. L. Kortright, 252 Rodney st
 E. C. Kroos, 151 Rodney st
 George R. Kuhn, 122 Clinton av
 J. F. Kuhn, 168 Jay st
 L. de B. Kuhn, 471 Willoughby av
 Wm. W. Laing, 542 Putnam av
 J. J. Lamadrid, 412 Greene av
 W. B. Lane, 367 Greene av

- J. E. Langstaff, 19 7th av
 A. W. Lawrence, 203 Bedford av
 John G. Leiter, 1127 Penn st
 A. S. Leonard, 875 Lewis av
 J. C. Lester, 406 Clinton st
 E. A. Lewis, 102 Pierrepont st
 Max Levy, 74 McKibben st
 H. W. Lincoln, 113 Hancock st
 M. Linderoth, 50 Greene av
 Frank Little, 114 Montague st
 W. A. Little, 923 Bedford av
 Joseph A. Livingston, 192 Wyona st
 H. Loewenstein, 223 Bushwick av
 Jacob Londoner, 62 McKibben st
 Jacob Long, 253 Penn st
 Leon Louria, 279 Hewes st
 T. M. Lloyd, 125 Pierrepont st
 D. F. Lucas, 552 Pacific st
 James M. MacEvitt, 407 Clinton st
 James F. McCaw, 138 Halsey st
 L. A. McClelland, 167 Hull st
 J. A. McCorkle, 149 Clinton st
 J. C. McEvitt, 407 Clinton st
 Constantine F. McGuire, 101 2d st
 H. C. McLean, 101 6th av
 James McManus, 445 4th st
 J. A. McLeod, 669 Leonard st
 S. J. McNamara, 325 Union st
 George McNaughton, 1 Cambridge pl
 L. C. McPhail, 127 Pierrepont st
 G. F. Maddock, 607 Macon st
 Wm. Maddren, 1 Hanson place
 F. J. Magilligan, 135 Bergen st
 L. P. A. Magilligan, 56 Berkeley place
 Hallock R. Maine, 24 7th av
 J. W. Malone, Bensonhurst
 C. S. Mann, 480a Greene av
 E. F. Marsh, 470 9th st
 J. H. Marshall, 536 Monroe st
 L. D. Mason, 171 Joralemon st
 A. Ross Matheson, 37 7th av
 H. C. Matthews, 894 Quincy st
 Arthur Matthewson, 139 Montague st
 J. B. Mattison, 185 Brooklyn av
 Nathaniel Matson, 415 Greene av
 E. H. Mayne, Bath and 18th av
 R. M. Mead, 377 Union st
 J. A. Meara, 4 Lafayette av
 L. E. Meeker, 956 Gates av
 G. Merolla, 17 Second place
 John Merriott, 842 President st
 A. G. Meyersburgh, 102 Bradford st
 Joseph Merzbach, 144 Wyckhoff st
 Frank S. Milbury, 434 Jefferson av
 F. H. Miller, 340 Stagg st
 Franklin P. Miller, 282 Stuyvesant av
 L. H. Miller, 14 Spencer place
 W. F. Millington, 326 S. 9th st
 E. J. Chapin Minard, 243 Quincy st
 Wm. Moitrier, 46 Stagg st
 Aug. J. Molloy, 129 William st
 Charles G. Motin, Brooklyn City
 Hospital
 S. H. Monell, 865 Union st
 John W. Moore, 427 Pacific st
 Robert J. Morrison, 354 Tompkins av
 Henry H. Morton, 40 Schermerhorn st
 L. J. Morton, 303 Henry st
 B. B. Mosher, 217 Schermerhorn st
 Eliza M. Mosher, 181 Joralemon st
 Carl Mueller, 132 Ewen st
 Henry F. C. Mueller, 340 State st
 A. Murray, 120 Joralemon st
 G. M. Muren, 74 Sands st
 D. Myerle, 568 Bedford av
 C. D. Napier, 473 Franklin av
 W. Neuss, 248 Central av
 Hayden Nichols, 289 Baltic st
 Lewis L. Nichols, 340 Stuyvesant av
 N. L. North, Jr., 118 Hooper st
 N. L. North, Sr., 627 Bedford av
 W. A. Northridge, 366 Schermerhorn st
 T. H. Northridge, 320 Cumberland st
 Henry Noss, 328 Jay st
 J. F. O'Connell, 159 Remsen st
 Burdett O'Conner, 149 Clinton st
 J. O'Grady, 130 Sands st
 G. B. O'Sullivan, 126 William st
 Charles A. Olcott, 572 Bedford av
 Cornelius Olcott, 572 Bedford av
 Robert Ormiston, 117 S. Elliott place
 George A. Ostrander, 61 Greene av
 J. W. Ostrander, 75 Clark st
 Andrew Otterson, 97 6th av
 Wm. C. Otterson, 144 Pierrepont st
 May R. Owen, 155 S. 4th st
 E. D. Page, 297 DeKalb av
 A. R. Paine, 99 Lafayette av
 Ernest Palmer, 155 Clinton st
 L. J. Paris, 135 7th av
 M. E. Parrot, 379 Jefferson av
 Geo. H. Parshall, 173 53d st
 J. M. Peacock, 247 Madison st
 Eugene F. Pearce, 95 Henry st
 A. E. Peck, 356 State st
 Francis Peele, 220 Schermerhorn st
 Arthur Pell, 1265 Dean st
 Charles P. Peterman, 826 Lafayette av
 H. S. Pettit, Adelphi Academy
 W. H. Philleo, 183 Herkimer st
 G. H. Pierce, 76 St. James place
 L. W. Pierson, 45 Third place
 L. S. Pilcher, 145 Gates av
 J. O. Polak, 25 7th av
 Wm. P. Pool, Long Island College
 Hospital
 Ralph H. Pomeroy, 60 Hanson place

H. F. Praeger, 180a Vernon av
 A. M. Pratt, 54 Arlington av
 W. H. B. Pratt, 94 6th av
 S. R. Pray, 523 Bedford av
 P. J. Prendergast, 531 Henry st
 Henry R. Price, 485 Franklin av
 J. S. Prout, 26 Schermerhorn st
 Joseph W. Purdy, 379 3d st
 Marion Pyles, 427 Nostrand av
 J. R. Quinn, 449 Lafayette av
 Alexander Rae, 20 Clinton st
 John Rankin, 302 Sumner av
 W. H. Rankin, 370 Tompkins av
 J. C. Rappold, Sr., 750 Flushing av
 J. C. Rappold, Jr., 750 Flushing av
 Leo Ratner, Belmont and Stone avs
 Joseph M. Raub, 298 Clinton st
 J. H. Raymond, 173 Joralemon st
 Henry N. Read, 339 Clinton st
 George E. Reed, 585 Madison st
 Henry Reed, 12 Verona place
 John Rendell, 685 Bedford av
 Edwin Reynolds, 140 Lafayette av
 B. H. Richardson, 284 Stuyvesant av
 J. Richardson, 125 S. Oxford st
 Wilbur L. Rickard, 651 Hancock st
 H. F. W. Risch, 208 17th st
 O. E. F. Risch, 208 17th st
 A. H. Ritter, 262 Hewes st
 U. S. Robinson, Blythebourne
 Victor A. Robinson, 777a Union st
 J. W. E. Roby, 484 Bedford av
 T. M. Rochester, 326 DeKalb av
 H. C. Rogers, 377 Gates av
 A. J. Rooney, 226 17th st
 F. H. Ross, 128 Sands st
 Anna Forest Rowe, 16 Spencer place
 Robert S. Royce, 343 Franklin av
 J. W. Russell, 368 Adelphi st
 J. H. E. Sand, 701 4th av
 J. W. Sansom, 594 St. Mark's av
 S. Santoire, 148 Clinton st
 C. T. Sauer, 433 10th st
 J. C. Schappys, 498 Bedford av
 Adam Schauf, 699 Willoughby av
 P. L. Schenck, 60 St. Mark's av
 Tunis Schenck, New Utrecht
 H. L. Schelling, 841 Willoughby av
 Wm. C. Schirmer, 366 Grand st
 C. B. Schlatter, 158 17th st
 F. A. Schlitz, 28 Jefferson av
 G. Schmetzer, 734 Flushing av
 J. A. Schmidt, 1195 Dean st
 Wm. C. Schmidt, 645 Park av
 George Schmitt, 108 Suydam st
 Wm. Schroeder, 339 President st
 Peter Scott, 128 Reid av
 R. Scrimgeour, 752 Carroll st
 C. J. Search, St. John's Hospital

Wilbur H. Seymour, Kings Co. Hosp.
 F. M. Sharpe, 134 S. Oxford st
 Frank W. Shaw, 327 Greene av
 J. C. Shaw, 226 Henry st
 Richard E. Shaw, 139 Pacific st
 James H. Shawe, 280 Clinton st
 A. W. Shepard, 126 Willoughby av
 C. H. Shepard, 81 Columbia Heights
 W. H. Shepard, 205 52d st
 John E. Sheppard, 147 Remsen st
 W. Sherman, 336 9th st
 Samuel Sherwell, 33 Schermerhorn st
 H. S. Shlevin, 188 Bedford av
 Fred. J. Shoop, 91 Macon st
 F. Siegel, 205 Bedford av
 Warren S. Simmons, Jr., 338 Lafayette
 ette av
 Wm. Simmons, 147 Remsen st
 A. J. C. Skene, 167 Clinton st
 W. H. Skene, 167 Clinton st
 S. H. Slote, 59 Leonard st
 E. F. Smith 177 Putnam av
 Joseph E. Smith, 92 Lee av
 J. Wheeler Smith 1120 Herkimer st
 Isaac B. Smith 571 Lorimer st
 M. L. Smith, 480 1st st
 W. H. Snyder, 139 Montague st
 James A. Somers, Schermerhorn st
 and Third av
 James H. Sommers, 9 Lafayette av
 Agnes Sparks, 140 S. Cortland av
 H. B. Speer, 728 Carroll st
 William E. Spencer, 293 DeKalb av
 D. M. Staebler, 690 Macon st
 Wm. H. Steers, 213 Spencer place
 Carl H. C. Stienke, 220 17th st
 J. H. Sterling, 227 Schermerhorn st
 W. Stewart, 188 State st
 John R. Stivers, 143 Lefferts place
 R. H. Stone, 178 Jay st
 Wm. E. Stratton, 71 7th av
 A. H. Straub, 324 S. 5th st
 F. H. Stuart, 123 Joralemon st
 Arnold Stub, 84 Sixth av
 Purdy H. Sturgis, 440 9th st
 J. D. Sullivan, 74 McDonough st
 R. H. Sullivan, 584 Franklin av
 Wm. E. Sullivan, 528 Henry st
 W. E. Sylvester, Kings County Lu-
 natic Asylum
 W. F. Swalm, 118 Lafayette av
 James J. Terhune, 169 Adelphi st
 C. H. Terry, 540 Washington av
 J. B. Thomas, 185 Joralemon st
 J. C. Thoms, 1280 Herkimer st
 L. E. Tieste, 6 Lafayette av
 J. F. Todd, Kings County Hospital
 W. A. Tomes, 500 Classon av
 T. W. Topham, 144 Schermerhorn st

W. S. Torrey, 81 Reed av
 Palmer Townsend, 535 Greene av
 I. O. Tracy, Clarkson st and Albany av
 A. S. Treadwell, 107 McDonough st
 G. H. Treadwell, 463 Gates av
 S. P. Truex, 283 Franklin av
 H. A. Tucker, Jr., 393 Clinton st
 H. C. Turner, 91 1st place
 W. J. Turner, 105 Clinton st
 J. Y. Tuthill, 100 Ft. Greene place
 J. M. Van Cott, Jr., 122 Joralemon st
 A. D. Vance, 117 Pacific st
 John von Glahn, 419 Sands st
 G. Wackerhagen, 326 Schermerhorn st
 H. A. Wade, 252 S. 9th st
 J. D. Wade, 252 S. 9th st
 J. E. Wade, 904 Lafayette av
 Henry Wallace, 183 Congress st
 Wm. Wallace, 183 Congress st
 Jerome Walker, 8 7th av
 J. E. Walsh, 488a 17th st
 James P. Warbasse, 109 Gates av
 H. S. Warner, 372 Lewis av
 D. Ed. Warren, Kings County Lunatic Asylum
 J. S. Waterman, 520 Nostrand av
 Wm. Waterworth, 3 Hancock st
 D. W. Waugh, 167 Union st
 Ashley A. Webber, 168 N. 6th st
 Frederick Weisbrod, 9 Lewis av
 Joseph E. Wells, 410 Clinton st

Thomas L. Wells, 883 St. Mark's av
 R. B. Welton, 513 Henry st
 G. W. Welty, 500 Clinton st
 F. E. West, 29 Schermerhorn st
 George E. West, 360 Greene av
 G. R. Westbrook, 175 Schermerhorn st
 R. W. Westbrook, 1265 Bedford av
 F. Weygant, 645 Bedford av
 Edward A. Wheeler, 509 Bedford av
 R. T. Wheeler, 210 Lee av
 Morris G. White, 59 Gates av
 L. A. Whitehouse, 236 Franklin av
 Jarvis S. Wight, 30 Schermerhorn st
 Thomas Wilde, 121 7th av
 George A. Williams, 449 Hancock st
 George S. Williams, 1038 Greene av
 H. F. Williams, 363 Grand av
 E. H. Wilson, 194 Keah st
 F. E. Wilson, 1242 Bushwick av
 James McF. Winfield, 1273 Pacific st
 F. H. Winter, 18 Patchen av
 F. J. Wood, 150 Washington av
 J. Scott Wood, 172 6th av
 W. I. Wood, 207 Hart st
 Walter C. Wood, 28 Herkimer st
 D. M. Wooley, 310 Sumner av
 James B. Worden, 254 Carlton av
 E. W. Wright, 135 Remsen st
 F. W. Wunderlich, 165 Remsen st
 John B. Zabriskie, 878 Flatbush av
 C. Zellhofer, 175 S. 4th st
 Number of Members, 560.

Deceased: Albert Coberg Hallam, January 9, 1895; Louis Conrad, January 25th; Benjamin Burroughs, March 7th; Benjamin F. Westbrook, April 12th; Stephen E. Fuller, May 2d; John Condit Halsey, May 7th; George E. Law, May 25th; Joshua Green Wilbur, June 25th; Fidelio B. Gillette, July 1st, æt. 61; Walter A. Morton, July 22d; Henry W. Rand, August 30th, æt. 43; John Van Ness, September 17th; John Lloyd Zabriskie, November 11th, æt. 64; Richmond Lennox, November 14th, æt. 34; Richard L. Van Kleek, December 18th; Samuel Fleet Speer, December 19th, æt. 57; Ferdinand W. Ostrander, January 30th; Charles L. Hogeboom, March 14th; Arnold Hallet, March 10th; Henry J. Hesse, May 19th; George K. Smith, July 15th; John Sylvester Young, September 23, æt. 62; Thomas F. Young, October 26th; Daniel Ambrose, December 16th.

MEDICAL SOCIETY OF THE COUNTY OF LEWIS.

(Organized January 8, 1861.)

MEETINGS.—Annual, fourth Tuesday in May; semi-annual, third Tuesday in December; quarterly, fourth Tuesday in March and September.

Officers.

F. A. Crane, *President*.
 W. O. Hubbard, *Secretary*.

F. E. Jones, *Vice-President*.
 W. H. Johnson, *Treasurer*.

Delegate to State Medical Society: C. P. Kirley.

Members.

R. H. Ash, Port Leyden
 F. A. Crane, Lowville
 A. H. Crosby, Lowville
 Charles E. Douglass, Lowville
 G. P. English, Boonville
 David Fawdrey, Watertown
 W. O. Hubbard, Lowville
 James Z. Hunt, Lowville
 W. W. Jamieson, Syracuse
 W. H. Johnson, Port Leyden
 F. E. Jones, Beaver Falls

Albert A. Joslin, Watertown
 C. P. Kirley, Lowville
 C. H. Merriam, Locust Grove
 S. H. Murphy, Glendale
 D. L. Murray, Croghan
 W. W. Nelson, Constableville
 Laurentine Rouchelle, Croghan
 Sarah E. Simonet, Croghan
 R. A. Stevens, Carthage
 O. O. Stowell, Watertown
 P. H. Zierolshofen, Croghan
 Number of Members, 22.

MEDICAL SOCIETY OF THE COUNTY OF LIVINGSTON.

(Organized June, 1866.)

MEETINGS.—Annual, second Tuesday in June; semi-annual, second Tuesday in December.

Officers. (May, 1896)

G. G. Jones, <i>President.</i>	M. E. Dickinson, <i>Vice-President.</i>
Edward C. Perry, <i>Secretary.</i>	Wm. E. Lauderdale, <i>Treasurer.</i>
<i>Censors:</i> J. P. Brown	J. M. Hagey,
J. C. Preston,	A. P. Wisner,
	C. H. Richmond.

Delegate to State Medical Society: F. H. Moyer.

Members.

F. J. Bowen, Tuscarora
 John P. Brown, Nunda
 L. W. Byam, Mumfordsburg
 J. E. Crisfield, Dansville
 John Denton, Retsof
 M. E. Dickinson, Dansville
 F. B. Dodge, Mt. Morris
 Fred. R. Driesbach, Dansville
 I. A. M. Dyke, York
 J. G. Filkins, York
 Robert W. Greene, Geneseo
 Jacob M. Hagey, Mt. Morris
 J. A. Jackson, Dansville
 James H. Jackson, Dansville
 Kate V. Jackson, Dansville
 G. G. Jones, Geneseo
 George H. Jones, Fowlerville

B. T. Kneeland, Dalton
 W. E. Lauderdale, Jr., Geneseo
 J. B. Losey, Conesus
 W. K. McGowan, Conesus
 R. J. Mensie, Caledonia
 F. H. Moyer, Moscow
 William Nesbit, Avon
 Charles V. Patchin, Dansville
 F. M. Perine, Dansville
 Edward C. Perry, Avon
 John C. Preston, Avon
 C. H. Richmond, Livonia
 G. W. Squires, Avon
 W. G. Steadman, Caledonia
 F. A. Strassenburgh, Lima
 Fred. A. Wicker, Hemlock Lake
 Addison P. Wisner, Nunda
 Number of Members, 34.

MEDICAL SOCIETY OF THE COUNTY OF MADISON.

(Organized July 29, 1866.)

MEETINGS.—Annual, second Tuesday in May.

Officers. (July, 1896.)

John R. Eaton, <i>President.</i>	William Taylor, <i>Vice-President.</i>
F. C. Drake, <i>Secretary.</i>	W. H. Griffith, <i>Treasurer.</i>

Censors: C. H. Perry, I. N. Goff, E. P. Bailey,
O. W. Burhyte, O. S. Langworthy.

Delegate to State Medical Society: Gilbert Birdsall.

Members.

E. P. Bailey, Oneida	W. H. Griffith, Munnsville
M. M. Billington, Chittenango	Horace Halbert, Canastota
Gilbert Birdsall, North Brookfield	A. N. Haskins, Hubbardsville
Edwin R. Bowden, Oneida	James F. Huntley, Oneida
N. O. Brooks, Perryville	M. R. Joy, Cazenovia
H. Clift Brown, Brookfield	J. W. Knapp, Canastota
O. W. Burhyte, Brookfield	O. S. Langworthy, Hamilton
E. H. Carpenter, Oneida	W. T. Lum, Bridgeport
H. W. Carpenter, Oneida	M. P. Messinger, Clockville
M. Cavana, Oneida	— McClelland, De Ruyter
D. D. Chase, Morrisville	G. W. Miles, Oneida
C. M. Colegrove, Canastota	Edgar L. Miller, Eaton
H. S. Crandall, Leonardsville	H. P. Mead, Morrisville
G. W. Davis, Peterboro	S. P. Moore, Munnsville
F. E. Dewey, Peterboro	George B. Munger, Canastota
A. P. Dodge, Oneida	C. H. Perry, Oneida
W. H. Douglas, East Hamilton	Otto Pfaff, Oneida
F. C. Drake, Oneida	A. D. Smith, New Woodstock
J. R. Eaton, Chittenango	William Taylor, Canastota
E. H. Galloway, Eaton	H. H. White, Earlville
I. N. Goff, Cazenovia	Number of Members, 41.

MEDICAL SOCIETY OF THE COUNTY OF MONROE.

MEETING.—Annual, last Wednesday in May.

Officers.

H. T. Williams, *President.* Frank F. Dow, *Vice-President.*
Frederic Remington, *Secretary.* J. H. McCort, *Treasurer.*

Delegates to State Medical Society: Alfred W. Haenckell, Marion Craig Potter, Frederic Remington, Lewis W. Rose.

Members.

(Where no town is mentioned Rochester is to be understood.)

F. D. Andrew, 71 East av	W. H. Briggs, 105 Columbia av
E. B. Angell, 294 Alexander st	T. A. Brown, Brighton
Azel Backus, 39 S. Washington st	W. M. Brown, Brighton
W. C. Bailey, Clifton	M. Alice Brownell, Newark, N. Y.
Evelyn Baldwin, 317 West av	James C. Buckley, 127 E. Main st
E. P. Ballantine, State Hospital	J. J. A. Burke, 65 East av
C. C. Barber, 149 Hudson st	Emily A. Cady, 234 Lake av
W. N. Barron, 79 Frank st	Chas. McD. Cameron, 106 Lake av
G. L. Beach, 91 South av	A. B. Carpenter, Greece
H. S. Beahan, 343 West av	A. M. Carpenter, North Greece
James Beahan, 343 West av	P. D. Carpenter, Pittsford
W. D. Becker, 56 Meigs st	George G. Carroll, 8 Sophia st
J. Brady, 87 Columbia av	R. L. Carson, 97 East av
A. N. Braham, Brockport	A. C. Cartwright, 82 Ambrose st
John D. Briggs, 43 S. Clinton st	J. W. Casey, 25 Sophia st
C. M. Briggs, Fairport	J. W. M. Cauley, 349 Monroe av

- Morey S. Collier, 1 Boston court
 Charles G. Combs, 185 Monroe av
 W. L. Conklin, 96 South av
 J. A. Cormier, 355 Central av
 H. H. Covell, 96 East av
 J. B. Cowles, Fairport
 Anna Craig, 50 S. Clinton st
 James F. Crowley, 369 State st
 J. R. Culkin, 414 Lyell av
 D. F. Curtis, 89 South av
 A. Dann, 406 Granite building
 C. E. Darrow, 116 East av
 James C. Davis, 8 Chestnut st
 S. W. Davison, 142 State st
 C. A. Dewey, 78 S. Fitzhugh st
 Sarah R. A. Dolly, 52 East av
 Frank F. Dow, 68 Vick Park Crescent
 J. D. Dunning, Webster
 H. S. Durand, 87 S. Fitzhugh st
 Edgar H. Earl, 420 Lyell av
 R. M. Elliott, State Hospital
 W. S. Ely, 78 S. Fitzhugh st
 S. L. Elsner, 83 N. St. Paul st
 John J. Evans, 123 Frank st
 Porter Farley, 173 Tremont st
 H. M. Fenno, 77 W. Main st
 Jas. H. Finnessy, St. Mary's Hospital
 J. B. Finnecone, Mendon, N. Y.
 G. T. Fischer, 181 N. Clinton st
 John W. Flick, Honeoye Falls
 Charles Forbes, 289 West av
 G. W. Foster, 62 State st
 George P. French, 234 Adams st
 Robert T. French, 209 Alexander st
 W. S. Fuller, Fairport
 L. T. Gandy, Chili
 Frederick Geare, 158 West av
 Horace Gee, 285 Lake av
 G. B. Gillett, 11 Meigs st
 F. H. Goddard, 265 Meigs st
 George Goler, 54 S. Fitzhugh st
 H. C. W. Graham, W. Webster
 Erlo P. Gray, 304 University av
 O. Groves, 39 Central Park
 P. C. Guinan, 309 N. St. Paul
 A. R. Gumberts, 48 Chatham st
 A. W. Haenckell, 116 Sophia st
 G. S. Hall, 62 Oxford
 Eugene F. Hamburg, Genesee st,
 near Brooks av
 D. G. Hastings, 49 Park av
 E. R. Hardenbrook, State Industrial
 School
 Sumner Hayward, 84 East av
 W. J. Herriman, 84 Sophia st
 S. A. Holman, North Parma
 B. L. Hovey, 34 N. Fitzhugh st
 E. H. Howard, Rochester State Hos-
 pital
 W. R. Howard, 392 E. Main st
 W. J. Howe, Scottsville
 H. B. Howell, 778 E. Main st
 Loren W. Howk, 394 West av
 C. A. Heeber, 196 S. Goodman
 J. M. Ingersoll, 275 Monroe av
 Thomas Jameson, 240 West av
 Ira T. Johnson, 138 Fulton av
 Frank A. Jones, 155 Lake av
 S. C. Jones, 21 East av
 Wm. B. Jones, 213 Lake av
 O. E. Jones, 389 E. Main st
 J. J. Kempe, 14 Grove st
 N. F. Kiefer, 663 N. Clinton st
 W. G. Lacy, Scottsville
 W. H. Lakeman, 97 Bolivar st
 F. A. Lervia, Rochester
 David Little, 162 Plymouth av
 S. W. Little, 162 Plymouth av
 M. L. Lord, 27 Hawthorne st
 C. H. Losey, 20 Phelps av
 J. McCauley, 349 Monroe av
 J. H. McCort, 77 East av
 J. M. Magil, Fairport
 A. P. Maine, Webster
 F. W. Maloney, 332 West av
 F. A. Mandeville, 98 North av
 H. J. Mann, Brockport
 W. B. Mann, Brockport
 G. A. Marion, 180½ N. Goodman st
 D. G. Mason, East Henrietta
 M. C. Mason, 195 Lyell av
 H. B. Miner, West Mendon
 E. M. Moore, 74 S. Fitzhugh st
 E. M. Moore, Jr., 74 S. Fitzhugh st
 R. M. Moore, 74 S. Fitzhugh st
 John F. Mulherin, 329 Plymouth av
 E. W. Mulligan, 290 West av
 H. R. Nettleton, 270 Lake av
 J. B. Nold, 165 North av
 T. A. O'Hare, 97 State st
 E. S. Olin, 178 Andrews st
 John E. Ottaway, Charlotte
 A. B. Parker, 54 S. Fitzhugh st
 Joseph Pease, Hamlin
 S. Perry, 103 S. Fitzhugh st
 H. C. Phillips, 181 Frank st
 S. A. Pierce, 195 South av
 G. F. Pope, 34 S. Union st
 Ida May Porter, 347 Monroe av
 E. B. Potter, State Hospital
 M. C. Potter, 62 S. Clinton st
 Ezra B. Pratt, Fairport
 B. I. Preston, 51 Vick Pk. av
 Edward J. Price, 88 Nassau st
 J. Ready,
 Charles Reitz, Webster
 Frederic Remington, 275 West av
 A. L. Richman, E. Kendall

C. E. Rider, 53 S. Fitzhugh st
 Wheelock Rider, 53 S. Fitzhugh st
 P. E. Rivard, 144 E. Main st
 A. S. Rockwell, 46 Elizabeth st
 John O. Roe, 28 N. Clinton st
 L. W. Rose, 52 Park av
 J. L. Roseboom, 628 E. Main st
 Moses Rosenberg, 374 Central av
 T. D. Rupert, Mendon
 Martin Rutherford, 23 Campbell st
 F. H. Sawers, 224 Lake av
 H. Schoonmaker, 235 Lake av
 Justin Schopp, 127 E. Main st
 Q. C. Schuhart, 248 St. Joseph st
 Anna H. Searing, 52 East av
 H. T. Sedgwick, Lyell av
 H. P. Shelden, 16 State st
 J. F. Sherman, 507 North st
 W. Sibley, 95 Lake av
 Mary J. Slaughter, 33 Chestnut st
 W. C. Slayton, Spencerport
 N. W. Soble, 7 University av
 L. J. Somers, 96 S. Clinton
 O. T. Stacy, 284 Alexander st
 Wm. Stanton, 12 Gorham st
 J. A. Stapleton, 61 East av
 Mary E. Stark, 27 Rowley st
 D. Starkey, Chili
 C. S. Starr, 95 North av
 Peter Stockschlager, 186 South av

E. V. Stoddard, 68 S. Washington st
 J. E. Sutton, Scottsville
 T. O. Tait, 18 Marietta st
 J. F. Thermon, 529 North st
 D. C. Throop, 136 North av
 Harriet M. Turner, 21 Williams st
 P. G. Udell, Spencerport
 J. C. Urquhart, 22 S. Clinton st
 C. A. Vanderbeck, 139 North st
 M. D. VanHoon, Churchville
 L. Allen Walker, 281 West av
 George Waldron, 408 Plymouth sv
 Wm. T. Wallace, 17 Hudson st
 W. W. Ward, 35 East av
 John E. Weaver, 385 Monroe av
 Wm. H. Webb, 14 Windsor st
 J. W. Whitbeck, 322 East av
 E. Whitcomb, 232 E. Main st
 L. A. Wiegel, 43 Mortimer st
 C. W. Wilbor, 763 N. St. Paul
 H. T. Williams, 52 Clinton place
 W. W. Williams, N. Parma
 Benjamin Wilson, 139 Lake av
 W. D. Wollf, 62 Clinton place
 C. D. Wooden, 129 Frank st
 Lettie H. Woodruff, 17 Tremont st
 Charles D. Young, 31 Caledonia av
 F. W. Zimmer, 45 Monroe av
 John Zimmer, 46 Rhine st
 Number of Members, 206.

MEDICAL SOCIETY OF THE COUNTY OF MONTGOMERY.

(Organized July, 1806.)

MEETINGS.—Annual, second Wednesday in December, at Fonda; semi-annual, second Wednesday in June, at Canajoharie; quarterly, second Wednesday in September and March, at Amsterdam.

Officers. (December, 1895.)

E. E. Rulison, *President*.
 Charles Stover, *Secretary*.

W. J. Peddie, *Vice-President*.
 E. F. Bronk, *Treasurer*.

Delegate to State Medical Society: C. W. DeBaun.

Members.

Louis Aiken, Rockton
 Douglas Ayres, Fort Plain
 Edmund F. Bronk, Amsterdam
 I. I. Buckbee, Fonda
 C. E. Congdon, Fort Plain
 C. W. DeBaun, Fonda
 Wm. H. DeLamater, Minaville
 J. R. Fairbanks, Amsterdam
 S. H. French, Amsterdam
 H. L. Furbeck, St. Johnsville
 T. G. Hyland, Amsterdam
 R. G. Johnson, Amsterdam

C. M. Klock, St. Johnsville
 John W. Kniskern, Amsterdam
 G. G. Lewis, Syracuse
 S. D. Lewis, Amsterdam
 Daniel M. McMartin, Amsterdam
 George L. Meyer, Stone Arabia
 Jay J. Miller, Cobleskill
 John Parr, Buell
 Wm. J. Peddie, Fultonville
 Wm. R. Pierce, Amsterdam
 Henry W. Post, Fultonville
 Wm. H. Robb, Amsterdam

E. E. Rulison, Buffalo	Peter L. Suits, Tribe's Hill
E. T. Rulison, Amsterdam	D. M. Taylor, Amsterdam
F. E. Simons, Canajoharie	D. N. Taylor, Canajoharie
A. V. H. Smyth, Amsterdam	C. F. Timmerman, Amsterdam
Augusta A. Steadman, Amsterdam	Christian C. Vedder, St. Johnsville
Charles Stover, Amsterdam	Frederick D. Vickers, Canajoharie
M. F. Sweatman, Amsterdam	S. A. Wessles, Canajoharie

Number of Members, 38.

Deceased: Ezra Graves, Amsterdam, June 30, 1895, æt. 70; William A. Liddle, Rockton, August 1, 1895, æt. 30.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

MEETINGS.—Annual, fourth Monday in October; stated meetings, the fourth Monday in each month, June, July, and August excepted, at the New York Academy of Medicine, 17 West Forty-third Street.

Officers. (1896.)

Edward D. Fisher, *President.* Frederick Peterson, *First Vice-President.*
 Charles H. Avery, *Secretary.* J. Henry Fruitnight, *Second Vice-President.*
 Wm. E. Bullard, *Assist. Secretary.* John S. Warren, *Treasurer.*

Censors: B. Farquhar Curtis, *Chairman,* Egbert H. Grandin,
 Arthur M. Jacobus, Seneca D. Powell, Charles L. Gibson.

Editor: Daniel Lewis.

Committee on Hygiene: John Winters Brannon, *Chairman;*
 Edward S. Peck, Egbert Le Fevre, George W. Jacoby, Dillon Brown.

Committee on Ethics: T. E. Satterthwaite, *Chairman;* J. Percival Tuttle,
 John Beach Knapp, Nathan E. Brill, Henry S. Stearns.

Committee on Prize Essays: W. H. Katzenbach, *Chairman;*
 D. Bryson Delevan, John Elmer Weeks.

Auditing Committee: Virgil P. Gibney, *Chairman;* George Woolsey.

Delegates to State Medical Society.

Waldron B. Vanderpoel,	William L. Stowell,	Henry Hall Forbes,
Henry S. Drayton,	Grace Peckham Murray,	Dillon Brown,
B. Farquhar Curtis,	Louis F. Bishop,	Emil Mayer,
Frederick Peterson,	Henry J. Garrigues,	A. D. Rockwell,
Elon N. Carpenter,	Frank Van Fleet,	Joshua L. Barton,
T. Passmore Berens,	Richard Van Santvoord,	Dwight W. Hunter,
James K. Crook,	Wm. H. Haskin,	A. H. Goelet,
Egbert H. Grandin,	Henrietta P. Johnson,	John Elmer Weeks,
Walter Lester Carr,	Charles L. Gibson,	George W. Jarman,
Thomas Darlington,	William B. Pritchard,	Mathias L. Foster,
Robert Milbank,	Daniel P. Pease,	Herman L. Collyer.
Simon Marx,	Robert A. Murray,	

HONORARY MEMBERS (EX-OFFICIO).

Article 5. The Governor of the State, the Mayor of the City of New York, the officers of the State Medical Society (non-residents of this county), and the Presidents of the several County Medical Societies for the time being, shall be *ex-officio* Honorary Members.]

HON. LEVI P. MORTON, *Governor of New York State.*

HON. WILLIAM L. STRONG, *Mayor of New York City.*

DR. J. D. SPENCER, *Watertown, President of the Medical Society of the State of New York.*

DR. F. C. CURTIS, *Albany, Secretary Medical Society State of New York.*

DR. C. H. PORTER, *Albany, Treasurer Medical Society State of New York.*

HONORARY MEMBERS (ELECTED).

Thomas A. McParlin, M.D., *Brevet Brigadier-General and Surgeon U. S. Army.*

George Edward Rindfleisch, M.D. (Berlin), *Director of the Pathological Institute in Würzburg.*

Julius Althaus, M.D. (Berlin), 1885, M.R.C.P. London, 1860; *Senior Physician, Hospital for Nervous Diseases, London.*

Henry Morris, L.R.C.P. London, 1867; F.R.C.S. 1873; *Surgeon to the Middlesex Hospital, London.*

John S. Billings, M.D., U. S. A. (Retired), New York.

Gaetano la Loggia, M.D., Palermo, Italy.

Sir William McCormac, F.R.C.S.I. 1864; F.R.C.S. England, 1871, *Surgeon to St. Thomas' Hospital, London.*

The presidents of the County Medical Societies, *ex-officio.*

ACTIVE MEMBERS.

Robert Abbe, 11 W. 50th st
Samuel V. Abel, 638 Lexington av
Frank Abbott, 22 W. 40th st
Frank Abbott, Jr., 206 W. 70th st
S. H. Abkarian, 152 W. 81st st
Onofrio Abruzzo, 95 Park st
Calvin Thayer Adams, 21 East 28th st
John L. Adams, 17 W. 45th st
Robert Staunton Adams, 24 W. 25th st
Lucius Coats Adamson, 17 E. 38th st
Isaac Adler, 12 East 6th st
David H. Agan, 1074 Lexington av
Aristides Agramonte, 144 W. 79th st
J. Francis Aitken, 220 E. 35th st
John Aldrich, 76 W. 82d st
Welcome T. Alexander, St. Nicholas av and W. 157th st
Ellice M. Alger, 113 Lexington av
Charles W. Allen, 126 E. 60th st
John E. Allen, 470 W. 144th st
Thomas H. Allen, 52 W. 45th st
Henry Altshul, 153 W. 76th st
J. R. Alvarez, 1350 Lexington av
C. G. Am Ende, 266 W. 42d st
Samuel Patten Ames, 206 W. 69th st
H. A. C. Anderson, 118 E. 86th st
James H. Anderson, 30 University pl
Joseph Anderson, 74 W. 92d st
Joseph Alfred Andrews, 9 W. 22d st
Frederick C. Anthes, 159 E. 82d st
S. T. Armstrong, 166 W. 54th st
Moses Aronson, 101 7th st
Morris J. Asch, 5 W. 30th st
Edward J. Aspell, 357 W. 56th st
John Aspell, 357 W. 56th st
Augustus Assenheimer, 323 E. 51st st
Charles Edwin Atwood, 8 W. 16th st

David P. Austin, 12 W. 95th st
Ernest W. Auzal, 50 W. 36th st
Charles H. Avery, 238 E. 18th st
Edward A. Ayers, 8 E. 34th st
James H. Bache, 252 W. 52d st
Eugene O. Bachmann, 312 W. 34th st
Gorham Bacon, 63 W. 54th st
Nathan Eddy Badgley, 74 Seventh av
Clinton L. Bagg, 67 W. 45th st
Thomas S. Bahan, 239 W. 14th st
Pearce Bailey, 60 W. 50th st
Mercy N. Baker, 303 E. 18th st
A. Brayton Ball, 42 W. 36th st
George Martin Ball, 365 W. 28th st
Henry Balser, 606 E. 9th st
William Balser, 218 E. 13th st
William L. Baner, 72 W. 45th st
Richard T. Bang, 139 W. 11th st
L. Bolton Bangs, 31 E. 44th st
Francis M. Banta, 304 W. 12th st
Julius Baran, 134 E. 79th st
Herbert Luther Barker, 132 W. 45th st
Justin L. Barnes, 16 E. 43d st
Andrew Linn Barrett, 166 W. 122d st
C. C. Barrows, 8 W. 36th st
Daniel E. Barry, 447 Lexington av
Frank H. Bartlett, 36 W. 65th st
William A. Bartlett, 7 W. 49th st
Joshua L. Barton, 57 E. 55th st
Simon Baruch, 51 W. 70th st
W. H. Bates, 64 E. 58th st
Sarah Angie French Battey, 124 W. 36th st
Frederick M. Bauer, 225 E. 86th st
Soma Baum, 255 2d st
Ferdinand Beach, 201 W. 44th st
Alexander W. Beck, 35 7th st

Carl Beck, 37 E. 31st st
 Philip G. Becker, 331 W. 18th st
 John N. Beekman, 10 E. 12th st
 William Duffield Bell, 160 W. 83d st
 Charles S. Benedict, 310 W. 102d st
 Walter Bensel, 205 W. 78th st
 George K. Bentz, 54 St. Mark's place
 T. Passmore Berens, 4 E. 43d st
 Charles Bernacki, 36 W. 28th st
 John Bettini-Moise, 20 W. 10th st
 John A. Beuermann, 1891 Lexington av
 Thomas Wotton Bickerton, 556 W End av
 Frederick Bierhoff, 170 W. 126th st
 Augustus E. Bieser, 256 W. 54th st
 George Bieser, 186 W. 102d st
 Andrew J. Bilhoefer, 153 E. 116th st
 John Haskell Billings, 249 Madison av
 Cornelius E. Billington, 85 Madison av
 Arthur Bird, 115 E. 40th st
 J. T. Joseph Bird, 236 W. 123d st
 Ernest R. Birkins, 240 W. 131st st
 Joseph N. Bishop, 12 W. 38th st
 Louis Faugeres Bishop, 30 W. 36th st
 Joseph B. Bissell, 15 W. 58th st
 Mary Taylor Bissell, 23 W. 44th st
 Carrie L. Black, 114 W. 123d st
 Emily Blackwell, 53 E. 20th st
 Joseph A. Blake, 1 E. 33d st
 Alonzo Blauvelt, 338 W. 12th st
 Asher Bleiman, 206 E. 48th st
 George D. Bleything, 1008 Madison av
 Moritz Bloch, 337 E. 58th st
 Frank J. Blodgett, 140 W. 72d st
 Herman H. F. Boeker, 227 E. 58th st
 George W. Bogart, 139 E. 47th st
 Sylvester S. Bogert, 219 E. 17th st
 Edward A. Bogue, 63 W. 48th st
 Hermann J. Boldt, 54 W. 51st st
 J. Arthur Booth, 419 Madison av
 R. O. Born, 23 W. 35th st
 Francke H. Bosworth, 26 W. 46th st
 Frank Archer Bottome, 41 W. 126th st
 James W. Bowden, Mutual Reserve Building, Broadway and Duane st
 Fred. J. Bowles, 146 W. 93d st
 Arthur Albert Boyer, 33 W. 33d st
 Nathan Gross Bozeman, 9 W. 31st st
 Max Bracker, 97 Second av
 C. Cole Bradley, 55 W. 33d st
 Edward Bradley, 19 W. 30th st
 Elizabeth Neely Bradley-Bystrom, 147 Warren st, Brooklyn
 Simeon C. Bradley, Marion av, Fordham
 Laban L. Bradshaw, 41 E. 72d st
 William G. Brady, 303 E. 23d st
 John Winters Brannan, 11 W. 12th st

John H. Branth, 116 W. 84th st
 James A. Breakell, 249 W. 52d st
 Edwin V. Brendon, 14 Charlton
 Thomas J. Brennan, 630 Walton av
 Wm. J. Brickelmaier, 24 W. 32d st
 Charles K. Briddon, 13 E. 33d st
 Arlander C. Bridges, 363 W. 28th st
 Eugene Z. Brievogelle, 324 9th av
 Nathan E. Brill, 125 W. 77th st
 Morris W. Brinkmann, 73 E. 92d st
 E. L. Macomb Bristol, 113 E. 18th st
 A. Norton Brockway, 50 E. 126th st
 Fred. J. Brockway, 183 W. 73d st
 George Livingston Brodhead, Sloane Maternity Hospital
 Edward B. Bronson, 123 W. 34th st
 George W. Brooks, 134 W. 37th st
 G. Frederick Brooks, 272 Boulevard (73d st. West)
 William R. Bross, 120 Broadway
 William R. Broughton, 156 Madison av
 Leroy Broun, 70 W. 2d st
 Walter Brooks Brouner, 256 W. 12th st
 Charles Henry Brown, 25 W. 45th st
 Dillon Brown, 40 E. 57th st
 Ethel Doty Brown, 128 Lexington av
 F. Tilden Brown, 40 E. 31st st
 William Bedford Brown, 14 W. 33d st
 Charles E. Bruce, 456 Lexington av
 Albert F. Brugman, 1043 Boston av
 J. Conger Bryan, 367 W. 48th st
 Joseph D. Bryant, 54 W. 36th st
 Louise Fiske Bryson, 70 W. 46th st
 Alexander Buchanan, 358 W. 30th st
 Augustus F. Buchler, 124 W. 58th st
 Albert H. Buck, 14 E. 45th st
 Francis D. Buck, 158 W. 48th st
 Charles A. Bucklin, 208 W. 42d st
 L. Duncan Bulkley, 4 E. 37th st
 Charles Stedman Bull, 47 W. 36th st
 William T. Bull, 35 W. 35th st
 William E. Bullard, 113 E. 40th st
 William M. Bullard, 302 Madison av
 Earl Sprague Bullock, 170 W. 85th st
 T. Hamilton Burch, 41 W. 34th st
 Thomas H. Buchard, 110 E. 18th st
 L. Burghheim, 176 E. 79th st
 Michael Joseph Burke, 164 Hester st
 Arnold Burkelman, 3 Charlton st
 Herbert D. Burnham, 109 W. 126th st
 Frederick A. Burrall, 48 W. 17th st
 Maurice J. Burstein, 179 Henry st
 Stephen Smith Burt, 21 W. 32d st
 J. H. Burtenshaw, 128 W. 82d st
 R. B. Burton, 223 E. 48th st
 Thomas W. Busche, 129 Second av
 Pine E. Bush, 45 Carlton
 Chas. H. Bushong, 59 W. 19th st
 George H. Butler, 964 Fifth av

H. Hoyle Butts, 313 Madison av
 Joseph Henry Byrne, 345 W. 51st st
 Caroline A. W. Cabot, 168 W. 48th st
 Follen Cabot, 41 W. 50th st
 John Cabot, 168 W. 48th st
 Herbert W. F. Cady, 121 E. 40th st
 Augustus Caille, 753 Madison av
 Peter A. Calan, 35 W. 38th st
 D. M. Cammann, 19 E. 33d st
 Robert Campbell, 239 W. 135th st
 William C. Campbell, 42 W. 49th st
 George F. Carey, 142 E. 19th st
 Albro R. Carman, 27 W. 127th st
 Sydney H. Carney, 201 W. 55th st
 Sydney H. Carney, Jr., 201 W. 55th st
 Alfred C. Carpenter, 219 E. 19th st
 Elon N. Carpenter, 120 E. 34th st
 Frank B. Carpenter, The Allston
 David C. Carr, 69 W. 126th st
 Walter Lester Carr, 6 E. 58th st
 Joseph S. Carreau, 18 W. 21st st
 Curtis B. Carter, 105 W. 71st st
 De Lancey Carter, 1034 Park av
 H. Skelton Carter, 103 E. 24th st
 J. H. Carver, South Broadway, cor.

Ludlow, Yonkers

Frederick A. Castle, 51 W. 58th st
 Wm. H. Caswell, 241 W. 74th st
 Charles M. Cauldwell, 16 W. 54th st
 Edwin R. Chadbourne, 31 W. 25th st
 Edwin C. Chamberlain, 54 W. 83d st
 P. Flewellen Chambers, 24 E. 54th st
 Amory Chapin, New York Raquette
 Club
 Henry Dwight Chapin, 51 W. 50th st
 Walter F. Chappell, 15 E. 38th st
 George T. Chase, 238 W. 127th st
 William Earle Chase, 50 E. 126th st
 Jean F. Chauveau, 31 W. 60th st
 Jean F. Chauveau, Jr., 31 W. 60th st
 Hobart Cheesman, 171 W. 81st st
 Walter Cheyne, 350 W. 145th st
 Joseph F. Chmelicek, 236 E. 71st st
 T. M. L. Chrystie, 216 W. 46th st
 Frank Churchill, 317 E. 86th st
 John Herbert Claiborne, 39 W. 36th st
 William Brewster Clark, 50 E. 31st st
 Trumbull W. Cleaveland, 45 W. 50th st
 Margaret A. Cleaves, 79 Madison av
 James B. Clemens, 148 W. 34th st
 Geo. Place Clements, 121 E. 106th st
 Clement Cleveland, 59 W. 38th st
 George Denison Clift, 219 W. 43d st
 Seth D. Close, 636 E. 143d st
 Meredith Clymer, 65 W. 38th st
 Cornelius G. Coakley, 126 E. 45th st
 George Henry Cobb, 18 W. 35th st
 Thomas F. Cock, 175 Second av
 Henry C. Coe, 64th, cor. Madison av

Lewis A. Coffin, 145 W. 12th st
 Henry Coggeshall, The Kensington
 Felix Cohn, 38 E. 60th st
 Louis Cohn, 139 E. 95th st
 Salo Cohn, 174 E. 82d st
 Carter S. Cole, The Grayling
 Palmer C. Cole, 254 W. 42d st
 Warren Coleman, 5 W. 30th st
 Wm. B. Coley, 52 W. 35th st
 Christopher J. Colles, 30 W. 33d st
 Chas. Farnham Collins, 27 W. 36th st
 Joseph Collins, 47 W. 38th st
 Herman D. Collyer, 109 E. 45th st
 Frank C. Combes, 220 E. 112th st
 John E. Comfort, 1315 Franklin av
 Lewis A. Conner, 18 W. 19th st
 William S. Conover, 237 W. 132d st
 Herbert L. Constable, 145 W. 45th st
 Edmund H. Cook, 134 W. 70th st
 J. Leonard Corning, 53 W. 38th st
 John B. Crosby, Barrett House
 Garret Cosine, 2150 Seventh av
 Gregory Costigan, 428 W. 34th st
 John H. Coughlin, 303 E. Broadway
 William Cowen, 35 E. 60th st
 John Grant Coyle, 317 Henry st
 Edwin B. Cragin, 62 W. 50th st
 Henry E. Crampton, 133 W. 123d st
 Floyd M. Crandall, 113 W. 95th st
 John Joseph Crane, 43 W. 71st st
 Antonio Maria Crispin, 212 E. 70th st
 Reuben Cronson, 238 E. 119th st
 James King Crook, 36 E. 29th st
 Michael F. J. Crowley, 304 7th av
 William Ledlie Culbert, 118 Madison
 av
 Everett Mallory Culver, 36 W. 35th st
 Richard H. Cunningham, 59 W.
 65th st
 Andrew F. Currier, 120 E. 34th st
 B. Farquhar Curtis, 7 E. 41st st
 Edward Curtis, 27 Washinton place
 H. Holbrook Curtis, 118 Madison av
 John G. Curtis, 327 W. 58th st
 Elizabeth Cushier, 53 E. 20th st
 William F. Cushman, 325 W. 22d st
 Condict W. Cutler, 135 W. 76th st
 Markar G. Dadirrian, 73 Lexington av
 James P. J. Daly, 563 E. 150th st.
 Charles L. Dana, 50 W. 46th st
 Annie S. Daniel, 327 E. 15th st
 Frank H. Daniels, 140 W. 126th st
 Frederic Danne, 44 W. 50th st
 Thomas Darlington, Jr., Kingsbridge
 Wm. L. Darlington, 507 Hudson st
 Joseph Davidson, 307 E. 82d st
 John P. Davin, 117 W. 76th st
 Albert A. Davis, 119 E. 62d st
 A. Edward Davis, 22 E. 41st st

Francis Wm. Davis, 211 W. 12th st
 E. Webster Davis, 153 W. 44th st
 Robert H. M. Dawbarn, 105 W. 74th st
 William C. Deane, 114 E. 60th st
 Willmot W. Dees, 325 W. 22d st
 William B. De Garmo, 56 W. 36th st
 Francis Delafield, 12 W. 32d st
 D. Bryson Delavan, 1 E. 33d st
 Eden V. Delphey, 353 W. 57th st
 Edward B. Dench, 17 W. 46th st
 Charles E. Denhard, 197 Edgecomb av
 William Sawyer Dennett, 8 E. 49th st
 Frederic S. Dennis, 542 Madison av
 Emmet C. Dent, Manhattan State
 Hospital

Myron Preston Denton, 33 E. 33d st
 Louis De Plasse, 27 and 29 E. 27th st
 Richard H. Derby, 9 W. 35th st
 Leonard A. Dessar, 25 W. 53d st
 S. Henry Dessau, 144 W. 85th st
 J. Harvie Dew, 252 W. 54th st
 A. Britton Deynard, 333 W. 51st st
 R. G. L. Diefenbach, 224 E. 48th st
 Frederick H. Dillingham, 326 W.
 45th st

Frank Irving Disbrow, 121 W. 83d st
 George A. Dixon, 15 W. 49th st
 George S. Dixon, 124 Lexington av
 Charles H. Dockstader, 281 W.
 118th st

Frederick E. D'Oench, 12 E. 28th st
 Wm. Elliott Dold, 8 W. 16th st
 John H. Dorn, 51 W. 9th st
 John Dorning, 252 W. 25th st
 George E. Doty, 216 W. 38th st
 Jas. Stewart Doubleday, 69 W. 93d st
 Daniel S. Dougherty, 352 W. 42d st
 O. B. Douglas, 123 E. 36th st
 Charles North Dowd, 135 W. 73d st
 John W. Doyle, 68 W. 93d st
 William F. Drake, 101 W. 84th st
 William H. Draper, 19 E. 47th st
 Henry S. Drayton, 27 E. 21st st
 Alexander Duane, 49 E. 30th st
 A. Palmer Dudley, 678 Madison av
 Arthur Baldwin Duel, 317 2d st
 Edward K. Dunham, 338 E. 26th st
 Theodore Dunham, 110 W. 57th st
 Thomas J. Dunn, 2735 Webster av
 Milo M. Dunton, 37 7th st
 Ghislani Durant, 12 W. 46th st
 Albert Durham, Bloomingdale, White
 Plains, N. Y.

Jonathan Dwight, Jr., 2 E. 34th st
 John Dwyer, 182 E. 111th st
 Robert Watts Eastman, 140 W. 76th st
 Martin J. Echeverria, 44 W. 75th st
 George M. Edebohls, 59 W. 49th st
 J. Clifton Edgar, 50 E. 34th st

Paul Ehrhart, 313 W. 30th st
 Anton Eidenbenz, 228 W. 49th st
 Max Einhorn, 20 E. 63d st
 M. Elezarian, 106 E. 24th st
 Ellsworth Eliot, 48 W. 36th st
 George T. Elliot, 14 W. 33d st
 George R. Elliott, 48 E. 26th st
 C. Ruxton Ellison, 206 E. 116th st
 Saram R. Ellison, 266 W. 43d st
 Charles P. Elwert, 47 W. 16th st
 Albert H. Ely, 47 W. 56th st
 J. Baxter Emerson, 20 E. 30th st
 J. H. Emerson, 81 Madison av
 Bache Emmet, 18 E. 30th st
 John Duncan Emmet, 91 Madison av
 Thos. Addis Emmet, 93 Madison av
 Bernhard Engelsman, 306 E. 89th st
 John F. Erdmann, 149 W. 44th st
 Michael Erlwein, 1349 Columbus av
 Peter H. Ernst, 141 E. 16th st
 G. A. Evans, 337 W. 15th st
 Frank J. Eversfield, 347 W. 21st st
 W. A. Ewing, 134 W. 58th st
 Charles Oliver Fairbank, 25 W. 45th st
 W. A. Fanning, 115 W. 63d st
 J. N. Farrar, 1271 Broadway
 Edward S. Farrington, 213 W. 81st st
 J. O. Farrington, 1991 Madison av
 William H. Farrington, Astor House
 M. B. Feeney, 32 E. 3d st
 S. Feinberg, 148 E. 81st st
 Amelia M. Fendler, 134 E. 87th st
 John E. Ferdinand, 220 W. 127th st
 James Alexander Ferguson, Lind av,
 High Bridge

James Francis Ferguson, 168 Lex-
 ington av
 Jeremiah S. Ferguson, 355 W. 28th st
 Jose M. Ferrer, 441 Park av
 Albert Warren Ferris, 13 E. 47th st
 Frank S. Fielder, 33 W. 93d st
 William J. Fields, 250 W. 88th st
 Charles S. Fischer, Jr., 201 W. 118th st
 Louis Fischer, 187 Second av
 Siegfried Fischer, 314 E. 15th st
 Gustav Grant Fischlowitz, 1708
 Lexington av

Edward D. Fisher, 42 W. 45th st
 Arthur Fishmann, 118 Rivington st
 Arthur Lyman Fisk, 13 W. 50th st
 James Porter Fiske, 328 W. 57th st
 Allen Fitch, 152 W. 34th st
 Patrick H. Fitzhugh, 151 E. 34th st
 Martin J. Fleming, 132 Lexington av
 Walter M. Fleming, Hotel Imperial
 William F. Fluhrer, 479 Fifth av
 Francis Foerster, 39 W. 52d st
 John P. Foland, 511 Hudson
 Henry Hall Forbes, 24 W. 25th st

- Charles M. Ford, 242 W. 135th st
 James C. Ford, 233 E. 104th st
 John A. Fordyce, 66 Park av
 William E. Forest, 101 Waverley pl
 Matthias L. Foster, 22 E. 41st st
 John Fourness-Brice, White Star
 Dock, foot of W. 10th st
 Edward Payson Fowler, 38 W. 40th st
 George B. Fowler, 18 E. 58th st
 Andrew Jackson Fox, 120 Broadway
 George Henry Fox, 18 E. 31st st
 John Frank, 111 Rivington st
 Edward Frankel, 217 E. 17th st
 J. H. Frankenberg, 142 E. 74th st
 George C. Freeborn, 215 W. 70th st
 Joseph Freedman, 162 E. 74th st
 Alpheus Freeman, 123 E. 74th st
 Rowland G. Freeman, 205 W. 57th st
 Wolff Freudenthal, 943 Madison av
 Edward Fridenberg, 2019 Fifth av
 Percy H. Fridenberg, 60 W. 76th st
 David Froehlich, 117 E. 80th st
 Richard Frothingham, 19 E. 38th st
 J. Henry Fruitnight, 161 W. 57th st
 Frederick Louis Fuchs, 10 St. Mark's
 place
 Eugene Fuller, 252 Lexington av
 Robert M. Fuller, 136 W. 42d st
 George Clarence Gage, 47 W. 49th st
 Anna M. Galbraith, 128 W. 70th st
 A. Ernest Gallant, 10 W. 36th st
 Alfred W. Gardner, 59 W. 54th st
 Wm. S. Gardner, 415 West End av
 Henry J. Garrigues, 716 Lexington av
 William J. Gaudineer, 131 E. 116th st
 Edwin Van Deusen Gazzam, 153 W.
 46th st
 Arpad G. Gerster, 34 E. 75th st
 W. Travis Gibb, 365 Lexington av
 Paul Gibier, cor. Central Park W.
 and 97th st
 Virgil P. Gibney, 16 Park av
 Charles Langdon Gibson, 46 W. 33d st
 Lewis M. Gibson, 158 W. 81st st
 J. Edward Giles, United Charities
 Bldg., Rooms 217, 217a, and 218,
 Fourth av and 22d st
 W. Whitehead Gilfillan, 37 W. 31st st
 Walter R. Gillette, 24 W. 40th st
 Francis Ginasi, 118 Macdougall
 Joseph Glaser, 132 E. 74th st
 Robert W. Glassford, 350 W. 46th st
 John Gleises, 302 E. 57th st
 Joseph Wm. Gleitsmann, 46 E. 25th st
 Samuel Gluck, 1041 Madison av
 A. Lawrence Gnichtel, 437 W. 44th st
 Augustin H. Goelet, 351 W. 57th st
 J. Riddle Goffe, 22 E. 35th st
 Herman Goldenberg, 22 E. 63d st
 Marcus K. Goldsmith, 1704 Lexing-
 ton av
 D. H. Goodwillie, 154 W. 34th st
 Bernard Gordon, 132 Henry
 Jonathan Rea Gordon, 49 E. 64th st
 John D. Gorman, 326 E. 67th st
 William S. Gottheil, 37 W. 50th st
 David Bartlett Gould, 139 Hester
 Sidney S. Graber, 185 E. 71st st
 Carl E. H. Graeb, 218 E. 114th st
 Egbert H. Grandin, 36 E. 58th st
 Frederic H. Grant, 173 Fifth av
 Gabriel Grant, 22 E. 49th st
 Joseph F. Gray, 354 W. 29th st
 Landon Carter Gray, 6 E. 49th st
 Rollin B. Gray, 775 West End av
 Wm. Greanelle, Jr., 6 W. 71st st
 Solomon Greebaum, 183 Stanton
 Robert Holmes Greene, 47 W. 33th st
 E. Harrison Griffin, 112 W. 45th st
 Henry Arthur Griffin, 37 W. 52d st
 Henry Griswold, 42 W. 35th st
 Morris Gross, 12 E. 73d st
 Emil Gruening, 109 E. 23d st
 Arago J. Guck, 236 E. 31st st
 Arthur Rose Guerard, 162 E. 114th st
 Charles F. Guillou, 26 E. 11th st
 Ramon Guiteras, 23 W. 53d st
 Herman F. Guleke, 224 W. 79th st
 Josephus Henry Gunning, 640 Mad-
 ison av
 J. Henry Guntzer, 345 E. 86th st
 Wm. C. Guth, 253 E. 71st st
 Edward Gutmann, 131 E. 76th st
 Frederick Guttman, 223 W. 127th st
 Jonas Guttman, 354 E. 4th st
 Fred W. Gwyer, 332 Lexington av
 Charles Alex. Habersack, 832 E.
 161st st
 John Habirshaw, 250 W. 57th st
 Charles E. Hackley, 144 W. 44th st
 Alexander Hadden, 155 E. 51st st
 Edwards Hall, 17 E. 66th st
 William H. Hall, 129 E. 54th st
 Luther Reeve Hallock, 155 W.
 129th st
 Silas F. Hallock, 136 E. 39th st
 Frank Spencer Halsey, 123 W. 69th st
 F. Halves, 247 E. 86th st
 Allan McLane Hamilton, 44 E. 29th st
 George Dempster Hamlen, 8 W. 36th st
 Graeme M. Hammond, 58 W. 45th st
 Irwin H. Hance, 130 W. 73d st
 Horace Tracy Hanks, 766 Madison av
 Thomas J. Harris, 117 E. 40th st
 George Tucker Harrison, 221 W. 23d st
 Jacob Hartmann, 267 W. 36th st
 Wm. Henry Haskin, 22 E. 41st st
 William Hassloch, 932 Second av

Louis Haupt, 63 Rivington st
 Foster S. Haven, 143 W. 61st st
 Walker A. Hawes, 745 Lexington av
 Harry W. Hawlik, 229 E. 14th st
 James Raynor Hayden, 107 W. 55th st
 Irving S. Haynes, 131 E. 86th st
 Henry Comstock Hazen, 66 W. 56th st
 Willard Avery Heacock, 139 W. 85th st
 Joseph S. Healy, 2886 Bailey av
 Jesse W. Hedden, 147 E. 21st st
 Henry Heiman, 220 E. 116th st
 Henry N. Heineman, 62 W. 51st st
 Charles Heitzmann, 39 W. 45th st
 Louis Heitzmann, 39 W. 45th st
 Herman Hellenstein, 710 E. 5th st
 J. Julio Henna, 8 W. 40th st
 Henry Herman, 627 Lexington av
 Justin Herold, 173 E. 80th st
 Everett Herrick, 126 Madison av
 Alfred A. Herzfeld, 211 W. 24th st
 Emil Heuel, 352 Willis av and 142d st
 Frank Heuel, 26 Irving place
 George Heywood, 143 W. 34th st
 Wm. Edward Hibbard, 590 Seventh av
 Edmund Yard Hill, 360 W. 58th st
 Thomas J. Hillis, 51 Charlton st
 Alfred K. Hills, 669 Fifth av
 Arthur T. Hills, 129 W. 81st st
 Gardner Hiron, 152 W. 49th st
 William Hirsch, 53 E. 60th st
 Charles Hitchcock, 57 W. 36th st
 Edwin F. Hitchcock, 114 W. 90th st
 H. M. Hitchcock, Mutual Reserve
 Life Ins. Co., Broadway and Duane
 Urban G. Hitchcock, 51 W. 29th st
 Ward B. Hoag, 66 W. 95th st
 Angier Bailey Hobbs, 66 W. 38th st
 Emanuel Hochheimer, 71 E. 91st st
 Abbott Hodgman, 141 E. 38th st
 Emil W. Hoeber, 612 Lexington av
 Charles Hoffman, 243 E. 86th st
 James K. Hogan, 140 Henry
 Wm. Frederic Holcombe, 54 E. 25th st
 T. N. Holden, 294 East Broadway
 Ward A. Holden, 45 W. 39th st
 Oscar Howe Holder, 24 E. 54th st
 Thomas H. Holgate, 206 W. 14th st
 Austin W. Hollis, 111 W. 47th st
 Geo. W. Holmes, Barrett House
 John F. Holmes, 844 E. 165th st
 Martha C. Holmes, 75 W. 126th st
 Edgar S. Holt, 322 W. 55th st
 L. Emmett Holt, 15 E. 54th st
 Oscar P. Honegger, 171 E. 71st st
 Franklin P. Hoover, 143 W. 45th st
 George B. Hope, 34 W. 51st st
 J. Louis Hopkins, 233 W. 54th st
 J. Swinburne Hopkins, 52 W. 84th st
 John Horn, 255 E. Broadway

Richard N. W. K. Horner, 104 W.
 84th st
 Lucius W. Hotchkiss, 49 W. 50th st
 H. Seymour Houghton, 301 W. 88th st
 Wm. Norris Hubbard, 17 E. 38th st
 Marvin D. Hubbell, 236 W. 136th st
 Francis Huber, 113 E. Broadway
 Joseph Huber, 113 E. Broadway
 John Bessner Huber, 238 W. 45th st
 John H. Huddleston, 126 W. 85th st
 Walter G. Hudson, 73 W. 131st st
 Henry G. Hughes, 139 E. 47th st
 Joseph J. Hull, 64 W. 35th st
 Frederic T. Hume, 82 E. 79th st
 Wm. A. Hume, 82 E. 79th st
 Geo. H. Humphreys, 23 E. 47th st
 Dwight W. Hunter, 233 Madison av
 George T. Hunter, 332 W. 33d st
 Abel Huntington, 346 Broadway
 Martha B. Huson, 237 E. 86th st
 Francis Hustace, 413 Madison av
 M. T. Hutchinson, 836 Broadway
 Frederick E. Hyde, 20 W. 53d st
 Henry Illoway, 1138 Madison av
 John Arthur Irwin, 14 W. 29th st
 Charles W. Jackson, 130 W. 81st st
 Frank W. Jackson, 12 W. 18th st
 Geo. Thomas Jackson, 14 E. 81st st
 Moses Jose Jackson, 125 E. 84th st
 Victor Hugo Jackson, 240 Lenox av
 Abraham Jacobi, 110 W. 34th st
 Mary Putnam Jacobi, 110 W. 34th st
 William Jacobsohn, 347 E. 83d st
 Arthur M. Jacobus, 126 W. 48th st
 George W. Jacoby, 663 Madison av
 Edward G. Janeway, 36 W. 40th st
 Thomas T. Janeway, 26 W. 17th st
 Joseph E. Janvrin, 191 Madison av
 Geo. Wallace Jarman, 61 W. 74th st
 John C. Jay, 54 W. 47th st
 Alexander McL. Jeffrey, 133 E. 39th st
 Smith Ely Jelliffe, 231 W. 71st st
 David D. Jennings, 315 E. 20th st
 Charles Taylor Jewett, 162 W. 22d st
 Henrietta Pauline Johnson, 21 Irving place
 Wm. Henry Johnson, 103 W. 29th st
 George W. Johnston, 1878 Lexington av
 James C. Johnston, 115 W. 84th st
 Jas. H. Jolliffe, 105 W. 86th st
 Charles N. D. Jones, 502 W. 142d st
 Israel C. Jones, Fordham
 S. Beach Jones, 28 W. 32d st
 S. Seabury Jones, 712 Madison av
 Adoniram B. Judson, The Madison
 Kenneth Frank Junior, 323 W. 28th st
 Moses S. Kakela, 814 Lexington av
 Richard Kalish, 36 W. 47th st

Fred Kammerer, 667 Madison av
 Arthur M. Kane, 71 W. 88th st
 Adolph Kantrovitz, 120 Rivington st
 W. H. Katzenbach, 22 W. 45th st
 Meyer Katzenbach, 1190 Lexington av
 Guido Katzenmayer, 625 Lexington av
 T. J. Kearney, 155 Lexington av
 Henry Judson Kelly, 305 E. 17th st
 James E. Kelly, 117 E. 59th st
 Thomas Kelly, 357 W. 57th st
 Charles B. Kelsey, 18 E. 29th st
 Robert Coleman Kemp, The Kensington
 John M. Kennedy, 168 W. 97th st
 John T. Kennedy, 107 E. 29th st
 Charles Gilmore Kerley, 113 W. 88d st
 Adolph Kessler, 906 Park av
 Theodore Keune, 70 W. 120th st
 Edward L. Keyes, 109 E. 34th st
 Louis F. Kiefer, 409 W. 57th st
 Eleanor B. Kilham, 2 Livingston pl
 Otto G. T. Kiliani, 133 E. 57th st
 Theron Wendell Kilmer, 9 E. 57th st
 Reuel B. Kimball, 24 E. 41st st
 Charles A. Kinch, 273 W. 70th st
 David F. King, 651 Lexington av
 Francis P. Kinnicutt, 42 W. 37th st
 Isaac L. Kip, 448 Fifth av
 Hermann G. Klotz, 42 E. 22d st
 Herman Knapp, 26 W. 40th st
 John B. Knapp, 62 W. 51st st
 Mark Israel Knapp, 280 Broome
 Ferdinand G. Kneer, 236 W. 51st st
 George S. Knickerbocker, 145 W. 128th st
 Charles H. Knight, 147 W. 57th st
 George Knipe, 353 W. 24th st
 R. A. Koempel, 319 E. 86th st
 Henry F. Koester, 336 E. 84th st
 Albert Kohn, 217 E. 62d st
 Sophie Kupfer Kohn, 132 Manhattan av
 Henry M. Koles, 88 Wall st
 Carl Koller, 715 Madison av
 Henry Koplik, 66 E. 58th st
 Frederic de Kraft, 242 W. 42d st
 Carl F. Kremer, 112 E. 57th st
 Geza Kremer, 358 E. 4th st
 Henry Krollpfeiffer, 48 St. Mark's pl
 Florian Krug, 13 E. 41st st
 Herman F. Kudlich, 56 W. 17th st
 George W. Kunz, 231 Lexington av
 Ferreol T. Labadie, Central Park West and 97th st
 Louis J. Ladiniski, 243 E. Broadway
 Edward W. Lambert, 2 E. 37th st
 Walter Eyre Lambert, 8 W. 35th st
 Leonard Landes, 43 St. Mark's place
 M. Landesmann, 727 E. 5th st

Samuel M. Landsman, 57 E. 3d st
 Fred Lange, 130 E. 61st st
 Gustav Langmann, 121 W. 57th st
 Boleslaw Lapowski, 28 W. 59th st
 James R. Latham, 126 W. 11th st
 James Law, 19 E. 127th st
 Charles A. Leale, 604 Madison av
 Wm. G. Le Boutillier, 49 W. 50th st
 M. D. Lederman, 128 E. 60th
 Egbert Le Fevre, 52 W. 56th st
 George M. Lefferts, 6 W. 33d st
 Bartholomew Lefkovics, 9 Clinton st
 Ellen C. Leggett, 303 E. 18th st
 Carl H. Lellmann, 71 E. 55th st
 S. Newton Leo, 103 W. 55th st
 Alexis Marcy Leon, 81 E. 56th st
 D. Alfred Leonard, 127 E. 84th st
 George Wm. Leonard, The Del Monte
 Z. L. Leonard, 326 E. 116th st
 A. Mona Lesser, 56 E. 61st st
 Wm. M. Leszynsky, 959 Madison av
 John Leuchs, 628 E. 145th st
 Frederick J. Levisieur, 640 Madison av
 J. Maurice Lewi, 78 W. 82d st
 David Clarence Lewinthal, 157 Henry
 Amos C. Lewis, Fordham Heights
 Charles Henry Lewis, 28 W. 61st st
 Daniel Lewis, 249 Madison av
 Frank N. Lewis, 36 E. 31st st
 Wm. Jerauld Lewis, 145 W. 43d st
 Albert Henry Leyton, The Rutland
 Alexander F. Liautard, 141 W. 54th st
 Charles Liebenau, 1143 Washington av
 J. Monroe Liebermann, 309 E. 4th st
 Anton Liebig, 111 E. 12th st
 Edward Nicholas Liell, 109 W. 84th st
 Howard Lilienthal, 679 Madison av
 Rufus P. Lincoln, 22 W. 31st st
 B. Abbott Lindsey, 215 W. 44th st
 Frieda E. Lippert, 53 Washington sq
 Wm. M. Lively, 216 W. 28th st
 Frank Livermore, Criminal Court Building, Paris
 Samuel Lloyd, 24 W. 50th st
 Charles E. Lockwood, 34 W. 38th st
 George Roe Lockwood, 44 W. 49th st
 Hugo J. Loebinger, 1054 Lexington av
 John Logue, 225 W. 34th st
 H. P. Loomis, 58 E. 34th st
 Edward J. Lorenze, 1658 Lexington av
 Edward Lowenbein, 147 Avenue B
 James M. Ludden, 243 W. 120th st
 Joseph Edward Lumbard, 1975 Seventh av
 Thurston G. Lusk, 164 E. 38th st
 William T. Lusk, 47 E. 34th st

- Sigmund Lustgarten, 15 E. 62d st
 Alexander Lyle, 117 E. 81st st
 James Walter Lyman, 424 W. 34th st
 P. J. Lynch, 216 E. 13th st
 George S. Lynde, 326 W. 45th st
 Jonathan F. Lyon, 231 E. 116th st
 Samuel K. Lyon, 312 Second av
 D. Stanley Lyons, 223 E. 30th st
 Frederick A. Lyons, 50 E. 63d st
 Charles McBurney, 28 W. 37th st
 Samuel McCallum, 17 Stuyvesant
 Henry B. McCarroll, 101 W. 85th st
 E. S. McClellan, Saranac Lake
 Peter J. McCourt, 233 W. 23d st
 William McCracken, 305 E. 18th st
 Forbes R. McCreery, 129 E. 40th st
 John A. McCreery, 20 E. 54th st
 John McCroskery, 319 W. 116th st
 Dennis J. McDonald, 207 E. 43d st
 William H. McEnroe, 17 E. 12th st
 George D. McGauran, 422 W. 51st st
 Timothy J. McGillicuddy, 776 Madison av
 E. L. H. McGinnis, 329 Amsterdam av
 J. P. McGowan, 109 E. 28th st
 Augustine Chas. McGuire, 105 W. 88th st
 Frank A. McGuire, 631 Lexington av
 William McKay, 40 E. 10th st
 James F. McKernon, 116 W. 48th st
 Arthur Muir McLaurie, 205 E. 14th st
 Wm. M. McLaury, 244 W. 42d st
 Malcolm McLean, 29 E. 126th st
 James A. McLochlin, 157 W. 21st st
 J. B. McMahon, 266 E. Broadway
 N. G. McMaster, 322 E. 15th st
 Joseph M. McMillan, 359 W. 47th st
 William S. McMurdy, 332 W. 51st st
 Julia G. McNutt, 265 Lexington av
 Sarah J. McNutt, 265 Lexington av
 Daniel E. McSweeney, 129 E. 29th st
 J. Milton Mabbott, 19 Fifth av
 R. K. Macalester, 108 E. 96th st
 A. E. Macdonald, Manhattan State Hospital
 Carlos F. Macdonald, The Cambridge, 334 Fifth av
 E. Macfarland, 242 W. 127th st
 Ferdinand S. Machale, 317 E. 87th st
 Burnett C. Macintyre, 146 W. 12th st
 D. H. Mackie, 224 W. 35th st
 Wm. Austin Macy, Manhattan State Hospital
 David Magie, 32 W. 48th st
 J. J. E. Maher, 215 W. 23d st
 Otto Maier, 316 E. 18th st
 Charles O. Maisch, 132 Broadway
 E. Pierre Mallett, 65 W. 69th st
 Nicholas Martin Mandl, 746 5th st
 F. S. Mandlebaum, 216 E. 60th st
 Morris Manges, 941 Madison av
 George Mannheimer, 183 E. 80th st
 Charles A. Manson, 123 E. 36th st
 Marcus Markiewicz, 61 Rivington st
 Francis H. Markoe, 15 E. 49th st
 Thomas M. Markoe, 500 Madison av
 Wilbur B. Marple, 20 W. 81st st
 J. Martin, 437 W. 47th st
 T. Dwight Martin, 523 E. 161st st
 Siegfried Martus, 1662 Lexington av
 David M. Marvin, 6 W. 130th st
 S. Marx, 947 Madison av
 Louis Irving Mason, 103 W. 75th st
 R. Osgood Mason, 348 W. 58th st
 Sumner A. Mason, 123 W. 127th st
 Calvin S. May, 57th st and Seventh av
 Charles H. May, 692 Madison av
 Abraham Mayer, 40 E. 60th st
 Emil Mayer, 25 E. 77th st
 A. W. Maynard, 308 W. 45th st
 James T. Meehan, 394 Broome st
 E. L. Meierhof, 57 E. 64th st
 Philip Meirowitz, 202 W. 131st st
 Samuel J. Meltzer, 66 E. 124th st
 Walter Mendelson, 159 W. 74th st
 John H. Mennen, 150 W. 22d st
 William Menzies, 149 W. 85th st
 Frank W. Merriam, 136 W. 11th st
 Estelle C. Merrill, 25 Madison av
 Edward J. Messemer, 144 Second av
 Alfred Meyer, 801 Madison av
 Alfred E. Meyer, 133 E. 38th st
 Willy Meyer, 700 Madison av
 Geo. Meyers, 47 E. 61st st
 Leonidas L. Mial, 145 W. 12th st
 Ludwig M. Michaels, 1090 Lexington av
 Robert Milbank, 154 W. 48th st
 Augustus Milleg, 66 Second av
 E. A. Miller, 1034 Park av
 Frank E. Miller, 121 W. 34th st
 Theo. De Clermont Miller, 102 E. 124th st
 Thomas S. P. Miller, 150 W. 37th st
 Jackson M. Mills, 651 Madison av
 Charles Milne, 124 E. 45th st
 S. B. Minden, 66 E. 8th st
 John C. Minor, 10 E. 41st st
 S. Carrington Minor, 850 E. 165th st
 Hubbard W. Mitchell, 747 Madison av
 Mary E. Mitchell, 156 W. 34th st
 Wm. F. Mittendorf, 140 Madison av
 Charles H. Moak, 2049 Seventh av
 Henry Moeller, 240 W. 38th st
 Richard Mollenhauer, 246 E. 53d st
 Nathan Molner, 56 Eldridge st
 S. H. Monell, 865 Union, Brooklyn
 Charles James Mooey, 749 Madison av

Henry W. Mooney, 18 W. 129th st
 John F. Moore, 156 W. 94th st
 Wm. Oliver Moore, 83 Madison av
 Joseph Moorhead, 310 Second av
 James Moran, 333 W. 51st st
 Charles F. Morcom, 252 W. 15th st
 Benjamin Morje, 181 E. 71st st
 J. Lee Morrill, 67 E. 79th st
 George F. Morris, 161 W. 87th st
 Lewis Morris, 228 W. 22d st
 Louis Morris, 77 Orchard
 Robert S. Morris, 146 E. 71st st
 Robert T. Morris, 49 W. 39th st
 Wm. Howe Morrison, 900 Boulevard
 Prince A. Morrow, 66 W. 40th st
 Wm. Golden Mortimer, 236 E. 53d st
 Bowditch Morton, University Club
 Wm. James Morton, 19 E. 28th st
 Alexis V. Moschowitz, 364 W. 55th st
 George J. Moser, 359 E. 10th st
 Gustave Mourraille, 74 W. 12th st
 Eugene C. Mowry, 355 W. 42d st
 Robt. P. Muellenbach, 232 E. 10th st
 Joseph Muir, 49 W. 3d st
 Richard W. Muller, 147 E. 18th st
 Paul F. Mundé, 20 W. 45th st
 John P. Munn, 18 W. 58th st
 Wm. H. Munn, 214 W. 42d st
 George E. Munroe, 43 E. 33d st
 Charles Basil Murray, 327 E. 79th st
 Robert A. Murray, 112 W. 80th st
 Howard G. Myers, 303 Amsterdam av
 Thad. Halsted Myers, 24 W. 50th st
 Robert C. Myles, 46 W. 38th st
 J. Darwin Nagel, 61 W. 35th st
 John T. Nagle, 47 E. 21st st
 Charles E. Nammack, 42 E. 29th st
 Miles Henry Nash, 217 W. 43d st
 George G. Needham, 218 E. 19th st
 Lewis Knode Neff, 1213 Park av
 Wm. B. Neftel, 16 E. 48th st
 James Neil, 1712 Madison av
 J. de Witt Nelson, 368 W. 55th
 Wolfred Nelson, Astor House
 John H. Nesbitt, 208 W. 42d st
 Albert W. Neufeld, 116 E. 119th st
 George E. Neuhaus, 171 W. 95th st
 John J. Neville, 247 W. 49th st
 Albert S. Newcomb, 206 W. 71st st
 James E. Newcomb, 118 W. 69th st
 Eleanor Frost Newton, Hotel Lincoln
 Robt. Safford Newton, 193 E. 44th st
 James E. H. Nichols, 4 E. 43d st
 Curt E. H. Nicolai, 229 E. 119th st
 Henry D. Nicoll, 51 E. 57th st
 J. R. Nilsen, 69 W. 50th st
 James D. Nisbit, 10 E. 43d st
 Mark Nivison, 214 W. 42d st
 John G. Noble, 222 W. 34th st

Felix Nordemann, 210 E. 60th st
 V. H. Norrie, 21 W. 37th st
 Henry S. Norris, 123 W. 34th st
 James H. North, Jr., 3 W. 74th st
 Wm. P. Northrup, 57 E. 79th st
 Henry D. Noyes, 233 Madison av
 Wm. Bradbury Noyes, 164 W. 73d st
 Francis A. Nye, 2089 Lexington av
 John M. O'Brien, 354 W. 35th st
 M. C. O'Brien, 161 W. 122d st
 John H. O'Connor, 49 W. 16th st
 Joseph O'Dwyer, 967 Lexington av
 Robert Offenbach, 46 E. 60th st
 Nathan Oppenheim, 50 E. 79th st
 Henry S. Oppenheimer, 49 E. 23d st
 Isaac Oppenheimer, 60 E. 67th st
 Charles C. Osborne, 117 W. 81st st
 William K. Otis, 5 W. 50th st
 Paul E. Outerbridge, 35 W. 53d st
 W. H. Oyler, 216 W. 124th st
 Charles W. Packard, 447 Park av
 R. C. M. Page, 31 W. 33d st
 Edmund J. Palmer, 1342 Lexington av
 Charles Inslee Pardee, 6 E. 43d st
 Edward L. Pardee, 190 W. 97th st
 Wm. Hallock Park, 128 W. 11th st
 Angenette Parry, N. Y. Infant Asylum
 John Parsons, Kingsbridge
 Ralph L. Parsons, 21 E. 44th st
 Ralph W. Parsons, 21 E. 44th st
 Edward L. Partridge, 19 Fifth av
 F. N. Patterson, 149 E. 34th st
 Sanders McAllister Payne, 327 Madison av
 Daniel P. Pease, 9 W. 24th st
 Edward Sprague Peck, 53 W. 50th st
 Grace Peckham-Murray, 25 Madison av
 James Pendersen, 29 E. 44th st
 Edward W. Peet, 20 W. 43d st
 Henry T. Peirce, 272 Lenox av
 Edward W. Perkins, 224 W. 131st st
 Joseph F. Perkins, St. James Hotel
 Ellis Banning Perry, 102 W. 48th st
 John Gardner Perry, 48 E. 34th st
 Frederick Peterson, 60 W. 50th st
 H. B. Pettingill, 102 W. 86th st
 Louis Clark Pettit, Ward's Island
 Alfred G. Pfeiffer, 236 E. 53d st
 Joseph Pfeiffer, 130 E. 62d st
 A. M. Phelps, 40 W. 34th st
 Frank V. Phelps, 224 Lexington av
 Charles E. Phillips, 51 E. 120th st
 Wendell C. Phillips, 350 Madison av
 Henry G. Piffard, 10 W. 35th st
 S. G. C. Pinckney, 253 West End av
 Edward Pisko, 151 E. 78th st

Albert Pittis, 403 W. 57th st
 W. O. Plimpton, 19 W. 84th st
 Albert G. Pohly, 178 E. 95th st
 Harry P. Poinsett, 301 W. 12th st
 Wm. M. Polk, 7 E. 36th st
 Sigmund Pollitzer, 32 E. 60th st
 Oren Day Pomeroy, 316 Lexington
 av
 Thomas R. Pooley, 107 Madison av
 Charles T. Poore, 43 W. 53d st
 W. Evelyn Porter, 50 W. 33d st
 Seneca D. Powell, 12 W. 40th st
 Adolf Pramann, 251 E. 86th st
 Robert H. Pretlow, 146 W. 21st st
 John Adolph Price, 105 7th st
 R. L. Pritchard, 71 W. 49th st
 Wm. B. Pritchard, 347 W. 58th st
 Wm. Rice Pryor, 15 Park av
 W. J. Pulley, 227 E. 86th st
 Alfred E. M. Purdy, 304 Madison av
 Harry Lavinton Purdy, 163 E. 71st st
 Harry R. Purdy, 149 Lexington av
 Leopold Putzel, 13 E. 57th st
 Charles E. Quimby, 44 W. 36th st
 Francis J. Quinlan, 54 W. 17th st
 Maximilian G. Raefle, 132 E. 25th st
 Henry Rafel, 106 W. 87th st
 Von F. Raitz, 101 W. 132d st
 E. Benj. Ramsdell, 581 Lexington av
 Edwin D. Ramsdell, 158 E. 33d st
 Ambrose L. Ranney, 156 Madison av
 Charles C. Ransom, 152 W. 48th st
 Samuel Rapp, 350 E. 50th st
 David L. Rauch, 1031 Lexington av
 G. W. Rautenberg, 335 E. 87th st
 Everett M. Raynor, 182 Willis av
 Adrian Y. Reid, 104 Lexington av
 John J. Reid, 853 Lexington av
 I. H. Reiley, 168 W. 23d st
 Jonas E. Reinthal, 76 E. 81st st
 Mary Augusta Requa, 65 W. 52d st
 Frederick T. Reyling, 139 E. 44th st
 Meyer L. Rhein, 38 E. 61st st
 Clarence C. Rice, 123 E. 19th st
 A. A. Richardson, 1187 Madison av
 William Richter, 327 Second av
 Frank W. Ring, 101 Park av
 Joseph C. Ritter, 52 Sixth av
 William Cabell Rives, 22 W. 33d st
 Jane Elizabeth Robbins, 95 Rivington
 Nathan S. Roberts, 739 Lexington av
 Thomas S. Robertson, 28 E. 20th st
 A. R. Robinson, 248 W. 42d st
 Beverley Robinson, 37 W. 35th st
 Fred C. Robinson, 221 W. 11th st
 Wm. J. Robinson, 112 E. 128th st
 A. D. Rockwell, 113 W. 34th st
 M. J. Rockwell, 1368 Lexington av
 Louis A. Rodenstein, St. Nicholas av

Traugott F. M. Roediger, 312 W.
 35th st
 John Rogers, 48 E. 31st st
 Oscar H. Rogers, 346 Broadway
 Thomas W. Rogers, 113 W. 115th st
 Willard H. Rogers, 225 W. 22d st
 De Witt C. Romaine, 473 Hudson st
 D. B. St. John Roosa, 20 E. 30th st
 Achilles Rose, 332 E. 15th st
 Louis Rosenbaum, 1358 Lexington av
 E. Rosenberg, 138 W. 85th st
 Julius Rosenberg, 24 W. 59th st
 Max Rosenberg, 128 E. 70th st
 Paul J. Rosenheim, 206 E. 46th st
 Max Rosenthal, 130 E. 82d st
 William Ross, 366 W. 27th st
 Henry Roth, 667 E. 135th st
 Ignatz Movray Rottenberg, 280 2d st
 Julius Rudisch, 121 E. 60th st
 Miriam Runyon, 151 W. 66th st
 Adolph Rupp, 406 W. 34th st
 Ernest F. Ruppe, 427 W. 47th st
 John F. Russell, 21 W. 11th st
 Wm. Logie Russell, 137 Broadway
 Domingo M. Sabater, 30 E. 21st st
 Gustavus A. Sabine, 43 E. 68th st
 B. Sachs, 21 E. 65th st
 Nicolaus H. Sachs, 205 E. Broadway
 Charles Walton Sanders, 53 E. 53d st
 Joseph Sanders, 120 E. 64th st
 Joseph A. Sanders, 310 W. 45th st
 Robert Alfred Sands, 39 E. 33d st
 Luis F. Sass, 56 W. 39th st
 F. Le Roy Satterlee, 8 W. 18th st
 Thos. E. Satterthwaite, 531 Fifth av
 R. H. Saunders, 791 Madison av
 John Sidney Sauvalle, 227 W. 22d st
 Watson Lewis Savage, 308 W. 59th st
 Eugene C. Savidge, 66 W. 50th st
 Josef Saxl, 247 E. 72d st
 Lewis A. Sayre, 285 Fifth av
 Barnim Scharlau, 66 W. 35th st
 John C. Scharp, 1804 Lexington av
 Julius Scheider, 187 E. 64th st
 John Wm. Schelpert, 64 W. 96th st
 Philip Scheu, 440 E. 16th st
 Gustavus Schlegel, 315 W. 31st st
 George Schlereth, 56 St. Mark's place
 Mathilda M. Schlereth, 56 St. Mark's
 place
 Joseph Schmitz, 145 Stanton st
 George Schoeps, 1883 Lexington av
 Warren Schoonover, 115 E. 59th st
 Charles Schram, 1074 Madison av
 Aimée R. Schroeder, 230 W. 135th st
 Henry H. Schroeder, 230 W. 135th st
 Edward F. Schwedler, 312 W. 34th st
 Max Joseph Schwerd, 58 E. 112th st
 Frit Schwyzer, 100 E. 58th st

Richard J. Scofield, 351 W. 14th st
 George Scott, 102 W. 75th st
 Francis A. Scratchley, 48 W. 35th st
 Harry H. Seabrook, 118 E. 72d st
 Louis L. Seaman, 18 W. 31st st
 William S. Seamans, 120 Broadway
 Gustav Seeligman, 39 E. 72d st
 Edward C. Seguin, 47 W. 50th st
 August Seibert, 114 E. 57th st
 Frederick S. Sellew, 61 E. 79th st
 Isaac M. Seltzer, 253 W. 38th st
 W. M. Seward, 126 E. 86th st
 Walter D. Sewell, 320 Lexington av
 Samuel Sexton, 12 W. 35th st
 Newton M. Shaffer, 28 E. 38th st
 John R. Shannon, 18 W. 35th st
 Wm. Shannon, 212 Second av
 Frank E. E. Shaw, 213 W. 134th st
 Joseph P. Sheridan, 308 E. 65th st
 A. Josephine Sherman, 26 E. 63d st
 Henry L. Shively, 145 W. 66th st
 John Bryon Shotwell, 137 W. 49th st
 George F. Shrady, 8 E. 66th st
 W. A. Shufelt, 56 W. 21st st
 Reuben C. Shultz, 214 E. 34th st
 H. M. Silver, 39 7th st
 Lewis M. Silver, 103 W. 72d st
 Charles E. Simmons, 762 Madison av
 Wm. K. Simpson, 952 Lexington av
 Joseph Simrock, 110 E. 25th st
 H. Marion Sims, 30 W. 58th st
 George W. Smallwood, 104 W. 84th st
 A. Alexander Smith, 40 W. 47th st
 Andrew H. Smith, 15 E. 38th st
 Charles Smith, 366 Broome
 Edward F. Smith, 257 W. 44th st
 Franklin Smith, 366 Broome
 Gouverneur M. Smith, 22 W. 55th st
 Judson C. Smith, 228 E. 19th st
 J. Gardner Smith, The Beverly
 Samuel W. Smith, San Remo Hotel
 Frederic E. Sondern, The Vancorlear
 Thomas S. Southworth, 47 W. 56th st
 Alfred M. Spalding, 419 W. 145th st
 George A. Spalding, 248 Lenox av
 Warren C. Spalding, 273 Lenox av
 J. H. Spann, 102 W. 74th st
 Louis Spannhake, 244 E. 13th st
 Dwight Seymour Spellman, Man-
 hattan State Hospital
 Arnot Spence, 70 W. 71st st
 D. Benham Spence, 615 W. 181st st
 E. C. Spitzka, 712 Lexington av
 Homer B. Sprague, 1383 Lexington av
 Henry S. Stark, 151 E. 72d st
 Moses Allen Starr, 22 W. 48th st
 Henry S. Stearns, 21 E. 44th st
 Thos L. Stedman, 327 Amsterdam av
 Whitmore Steele, 155 E. 77th st

Ch. Steiger, 93 Second av
 Alexander W. Stein, 30 W. 15th st
 Richard Stein, 811 Lexington av
 Sydney A. Stein, 158 E. 72d st
 Kate L. S. Sterling, 155 W. 48th st
 Heinrich Stern, 1338 Lexington av
 Lassar Stern, 150 E. 89th st
 Frederick A. Sternberg, 414 E. 50th st
 Edwin Sternberger, 43 E. 60th st
 John A. Steurer, 78 W. 47th st
 George T. Stevens, 33 W. 33d st
 William Stevens, 70 W. 52d st
 Leopold Stieglitz, 58 E. 66th st
 John E. Stillwell, 9 W. 49th st
 Charles W. Stimson, 61 W. 69th st
 Daniel M. Stimson, 11 W. 17th st
 L. A. Stimson, 34 E. 33d st
 G. Mozart Stoeckel, 260 W. 42d st
 William F. Stone, 125 W. 34th st
 William S. Stone, 260 W. 57th st
 William L. Stowell, 28 W. 36th st
 A. Russell Strachan, 25 E. 30th st
 Ludwig Straus, 211 E. 13th st
 Rosa Welt Straus, 298 Manhattan av
 J. Watson Stronach, 265 W. 52d st
 Cyrus John Strong, 60 W. 75th st
 Frederic Russell Sturgis, 16 W. 32d st
 Arnold Sturmdorf, 106 E. 62d st
 Fremont Swain, 120 E. 86th st
 Albert T. Swan, 317 E. 18th st
 John H. Swasey, 34 E. 28th st
 Edwin E. Swift, 112 W. 81st st
 George Montague Swift, 29 E. 31st st
 William J. Swift, 40 E. 30th st
 George K. Swinburne, 48 E. 31st st
 R. E. Swinburne, 123 W. 121st st
 Robert Bancker Talbot, 64 W. 50th st
 Bernard S. Talmey, 232 E. 78th st
 George W. Talson, 46 Seventh av
 Wm. A. Taltavall, 2137 Seventh av
 J. Ocroft Tansley, 28 W. 43d st
 C. Fayette Taylor, 117 W. 55th st
 George Ash Taylor, 26 W. 34th st
 Henry Ling Taylor, 117 W. 55th st
 Howard C. Taylor, 60 W. 38th st
 Robert W. Taylor, 40 W. 21st st
 Jacob Teschner, 134 E. 61st st
 John Thelberg, 10 W. 33d st
 Robt. H. Theyson, 61 St. Mark's place
 Allen M. Thomas, 61 W. 54th st
 Theo. G. Thomas, 600 Madison av
 Ed. W. Thompson, 302 E. Broadway
 George S. Thompson, Northwestern
 Dispensary
 Von Beverhout Thompson, 111 W.
 43d st
 W. Gilman Thompson, 34 E. 31st st
 Edgar Steiner Thomson, 16 E. 43d st
 Wm. H. Thomson, 7 W. 56th st

Josiah Payne Thornley, 119 W. 75th st
 John Joseph Tierney, 212 E. 109th st
 Wm. J. Tierney, 212 E. 109th st
 Edward C. Titus, 248 W. 11th st
 Max Toeplitz, 123 E. 62d st
 Byron V. Tompkins, 26 W. 61st st
 Franz J. A. Torek, 699 Madison av
 Sinclair Tousey, 29 W. 38th st
 Frederick M. Townsend, 36 W. 35th st
 Wisner R. Townsend, 28 W. 59th st
 E. Clark Tracy, 27 E. 126th st
 Samuel G. Tracy, Hotel St. Lorenz
 Henry Tuck, 346 Broadway
 C. P. Tucker, 43 W. 26th st
 Ervin A. Tucker, 57 W. 53d st
 Edward G. Tuffs, 30 Oliver st
 Marcus E. Tully, 137 W. 76th st
 Theodore K. Tuthill, 319 W. 18th st
 Geo. Montgom. Tuttle, 49 W. 38th st
 James P. Tuttle, 35 W. 45th st
 Sigmund Tynberg, 321 E. 42d st
 Henry H. Tyson, Jr., 47 W. 51st st
 Sophia Unger, 241 W. 43d st
 William H. Upton, 205 E. 124th st
 Francis Asbury Utter, 108 W. 71st st
 Ferd. C. Valentine, 242 W. 43d st
 William A. Valentine, 45 W. 35th st
 Francis Valk, 146 E. 37th st
 Wm. W. Van Arsdale, 32 W. 33d st
 George M. Vandegrift, 277 Henry st
 Horace Clair Vandenbergh, 126 E. 45th st
 John Van der Poel, 36 W. 39th st
 S. O. Van der Poel, 47 E. 25th st
 Waldron B. Vanderpoel, 106 E. 24th st
 Clinton De Witt Van Dyck, 47 W. 93d st
 Frank Van Fleet, 116 E. 82d st
 James Casper Plimpton Van Loan, 344 W. 33d st
 Richard Van Santvoord, 106 W. 122d st
 Jefferson Brockner Van Tine, 127 W. 11th st
 W. W. Van Valzah, 10 E. 43d st
 Charles Van Wert, 115 W. 97th st
 Maus R. Vedder, 690 Madison av
 Augusta Vedin, 224 E. 15th st
 Agnes C. Vietor, 1 W. 97th st
 H. N. Vineberg, 127 E. 61st st
 Maria Mitchell Vinton, 157 E. 36th st
 Albert Volkenberg, 64 Rivington st
 Andrew Von Grimm, 36 St. Mark's pl
 C. A. Von Ramdohr, 45 Irving pl
 Henry J. Wackerbarth, 96 Second av
 Clinton Wagner, 19 E. 38th st
 Ralph Waldo, 68 W. 50th st
 Louis Waldstein, 941 Madison av
 Henry F. Walker, 8 E. 30th st
 John B. Walker, 33 E. 33d st
 S. J. Walsh, 25 E. 128th st
 Josephine Walter, 101 W. 75th st
 Luis P. Walton, 73 W. 50th st
 Edwin F. Ward, 29 W. 36th st
 Francis R. Ward, 709 Madison av
 George Gray Ward, 230 W. 59th st
 Whitfield Ward, 128 E. 36th st
 Albert Wm. Warden, 130 W. 104th st
 Yeatman Wardlow, The Grenoble
 George T. Warford, 132 W. 82d st
 John W. Warner, 107 E. 72d st
 John Warner, 106 E. 29th st
 John S. Warren, 150 W. 48th st
 M. Claudius Warsaw, 255 W. 52d st
 John W. Warth, 253 Broome
 Hill Sloane Warwick, 57 W. 126th st
 Wickes Washburn, 21 E. 21st st
 Sigismund Waterman, 165 E. 60th st
 Robert L. Watkins, 320 W. 145th st
 William S. Watson, 105 W. 47th st
 Robert Watts, 45 W. 36th st
 Leonard Weber, 25 W. 46th st
 David Webster, 327 Madison av
 Edgar T. Weed, 117 W. 121st st
 John E. Weeks, 154 Madison av
 Robert F. Weir, 37 W. 33d st
 Ludwig Weiss, 77 E. 91st st
 Faneuil D. Weisse, 46 W. 20th st
 Charles Stuart Welles, 1 E. 39th st
 Brooks H. Wells, 71 W. 45th st
 Walter S. Wells, 37 W. 82d st
 Sara Welt-Kakels, 814 Lexington av
 Edmund C. Wendt, 118 W. 79th st
 James Nephew West, 52 E. 31st st
 N. S. Westcott, 156 W. 12th st
 William Westerfield, 109 W. 123d st
 Albert T. Weston, 226 Central Park W
 William H. Weston, 400 W. 22d st
 George T. Wetmore, 36 W. 35th st
 Claude L. Wheeler, 251 W. 52d st
 George G. Wheelock, 75 Park av
 William E. Wheelock, 13 W. 48th st
 Archibald C. White, Hotel Endicott
 Charles Bell White, 107 W. 72d st
 George R. White, 144 W. 44th st
 Granville Moss White, 272 W. 77th st
 John Blake White, 1013 Madison av
 Octavius A. White, 1011 Madison av
 Ralph Mozart Whitehead, 441 Lexington av
 Henry H. Whitehouse, 4 E. 37th st
 Fred Whiting, 36 E. 31st st
 Royal Whitman, 126 W. 59th st
 Joseph Wiener, 1046 Fifth av
 Richard G. Wiener, 48 E. 65th st
 Daniel H. Wiesner, 145 E. 46th st
 Fred. H. Wiggan, 55 W. 36th st
 Reynold W. Wilcox, 749 Madison av
 Mark H. Williams, 227 W. 135th st

Edward Lincoln Williamson, 105 W. 74th st
 Gustavus S. Winston, 42 W. 39th st
 Joseph E. Winters, 25 W. 37th st
 Lazare Wischnewetzky, 776 Madison av
 Rudolph A. Witthaus, 303 W. 77th st
 Justin Wohlfarth, 32 W. 128th st
 G. Wolf, 185 Henry st
 Max Wolper, 189 Henry st
 Benjamin Wood, Jr., 846 E. 165th st
 Halsey Lathrop Wood, 349 Lenox av
 William B. Wood, 22 E. 41st st
 John Woodman, 123 E. 25th st
 George Woolsey, 117 E. 36th st
 Willard P. Worster, 210 W. 84th st
 Peter B. Wyckoff, 23 W. 57th st
 Robert H. Wylie, 36 W. 35th st
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 Gerardus H. Wynkoop, 128 Madison av
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 Number of Members, 1334.

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(Instituted January 6, 1847. Incorporated June 23, 1851.)

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 Frank W. Chapin, 102 W. 44th st
 Henry D. Chapin, 51 W. 50th st
 Walter F. Chappell, 15 E. 38th st
 Jean F. Chauveau, 31 W. 60th st
 Jean F. Chauveau, Jr., 31 W. 60th st
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 William S. Cheesman, Auburn
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 T. W. Cleveland, 45 W. 50th st
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 Cornelius G. Coakley, 126 E. 45th st
 Henry C. Coe, 27 E. 64th st
 Lewis A. Coffin, 145 W. 12th st
 Henry Coggeshall, 102 E. 57th st
 Felix Cohn, 38 E. 60th st
 Carter S. Cole, 101 W. 74th st
 Edward O. Coles, 629 Lexington av
 William B. Coley, 52 W. 35th st
 Joseph Collins, 47 W. 38th st
 Stacy B. Collins, Germantown, Phila-
 delphia, Pa.
 Herman L. Collyer, 109 E. 54th st
 Frank Combes, 220 E. 112th st
 George S. Conant, 148 E. 18th st
 Stephen G. Cook, 111 W. 12th st
 J. Leonard Corning, 53 W. 38th st

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 Henry E. Crampton, 133 W. 123d st
 Floyd M. Crandall, 113 W. 95th st
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 James K. Crook, 36 E. 29th st
 Andrew F. Currier, 120 E. 34th st
 Charles G. Currier, 75 W. 55th st
 B. Farquhar Curtis, 307 Madison av
 H. Holbrook Curtis, 118 Madison av
 Elizabeth M. Cushier, 53 E. 20th st
 William F. Cushman, 325 W. 22d st
 Condict W. Cutler, 135 W. 76th st
 Alexander Dallas, 22 E. 22d st, and
 Bayonne, N. J.
 Charles L. Dana, 50 W. 46th st
 S. W. Dana, 313 W. 33d st
 Albert A. Davis, 119 E. 62d st
 R. C. Davis, 150 E. 128th st
 Robt. H. M. Dawbarn, 105 W. 74th st
 Wm. B. De Garmo, 56 W. 36th st
 Francis Delafield, 12 W. 32d st
 D. Bryson Delavan, 1 E. 33d st
 Edward B. Dench, 17 W. 46th st
 Chas. E. Denhard, 197 Edgecomb av
 Frederic S. Dennis, 542 Madison av
 Emmet C. Dent, Asylum for Insane,
 Female Dept., Ward's Island
 Richard H. Derby, 9 W. 35th st
 Leonard A. Dessar, 58 W. 49th st
 S. Henry Dessau, 144 W. 85th st
 Robert J. Devlin, 156 W. 13th st
 J. Harvey Dew, 252 W. 54th st
 A. Britton Deynard, 333 W. 51st st
 R. L. Dickinson, 145 Clinton st,
 Brooklyn
 F. H. Dillingham, 636 Lexington av
 George A. Dixon, 15 W. 49th st
 William G. Dobson, 301 Mill st,
 Poughkeepsie
 Frederick E. d'Oench, 12 E. 28th st
 W. E. Dold, White Plains
 Edwin J. Donlin, 129 W. Houston st
 John Dorning, 252 W. 25th st
 Alvah H. Doty, 59 W. 35th st
 Henry B. Douglas, 171 W. 81st st
 Orlando B. Douglas, 123 E. 36th st
 Charles N. Dowd, 135 W. 73d st
 William H. Draper, 19 E. 47th st
 William K. Draper, 33 W. 39th st
 A. Palmer Dudley, 678 Madison av
 E. K. Dunham, 338 E. 26th st
 T. Dunham, 133 W. 24th st
 Ghislani Durant, 12 W. 46th st
 George M. Edebohls, 59 W. 49th st
 John H. Eden, Creston av, Fordham
 James C. Edgar, 54 E. 34th st
 Paul Ehrhart, 313 W. 30th st
 Max Einhorn, 20 E. 63d st

Ellsworth Eliot, 48 W. 36th st
 George R. Elliott, 48 E. 26th st
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 William S. Ely, Rochester
 J. B. Emerson, 20 E. 30th st
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 Bache McE. Emmet, 18 E. 30th st
 Thomas A. Emmet, 93 Madison av
 John F. Erdmann, 149 W. 44th st
 W. A. Ewing, 134 W. 58th st
 Henry A. Fairbairn, 249 McDonough st, Brooklyn
 Warren A. Fanning, 115 W. 63d st
 J. O. Farrington, 1991 Madison av
 William H. Farrington, Astor House, Broadway and Vesey st
 Frank Ferguson, 20 W. 38th st
 James F. Ferguson, 168 Lexington av
 Jose M. Ferrer, P. O. box 177, N. Y. City
 Albert W. Ferris, 12 E. 47th st
 C. G. J. Finn, Hempstead
 Edward D. Fisher, 42 W. 45th st
 Louis Fischer, 187 Second av
 James P. Fiske, 328 W. 57th st
 Arthur Lyman Fisk, 11 W. 50th st
 Martin J. Flemming, 132 Lexington av
 Austin Flint, Jr., 18 E. 45th st
 Francis Foerster, 39 W. 52d st
 Willis E. Ford, Utica
 John A. Fordyce, 66 Park av
 Wm. E. Forrest, 39½ Washington sq
 Frank P. Foster, 16 E. 31st st
 George V. Foster, 109 E. 18th st
 Edward P. Fowler, 38 W. 40th st
 George B. Fowler, 18 E. 58th st
 George R. Fowler, 302 Washington av, Brooklyn
 George H. Fox, 18 E. 31st st
 Edward Frankel, 217 E. 17th st
 George C. Freeborn, 215 W. 70th st
 Rowland G. Freeman, 205 W. 57th st
 Thos R. French, 150 Joralemon st, Brooklyn
 W. Freudentha, 943 Madison av
 Albert G. Fridenberg, 60 E. 61st st
 Edward Fridenberg, 242 Lenox av
 Alfred Friedman, 862 Lexington av
 David Froehlich, 117 E. 80th st
 Richard Frothingham, 19 E. 38th st
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 Jacob Fuhs, 286 Jefferson av, Brooklyn
 Eugene Fuller, 252 Lexington av
 Robert M. Fuller, 136 W. 42d st
 Anna M. Galbraith, 164 W. 73d st
 A. Ernest Gallant, 10 W. 36th st
 Jasper J. Garmauy, 40 W. 40th st

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 Arpad G. Gerster, 56 E. 25th st
 Virgil P. Gibney, 16 Park av
 Chas. Langdon Gibson, 46 W. 33d st
 J. Edward Giles, 127 E. 16th st
 Wm. Gilfillan, 98 Remsen st, Brooklyn
 W. W. Gilfillan, 37 W. 31st st
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 Henry A. Griffin, 37 W. 52d st
 Henry Griswold, 42 W. 35th st
 Emil Gruening, 109 E. 23d st
 Ramon Guiteras, 23 W. 53d st
 Fred. W. Gwyer, 332 Lexington av
 Alexander Hadden, 155 E. 51st st
 Edwards Hall, 17 E. 66th st
 William H. Hall, 129 E. 54th st
 Silas F. Hallock, 136 E. 39th st
 F. Spencer Halsey, 210 W. 69th st
 Graeme M. Hammond, 58 W. 45th st
 Irvin H. Hance, 130 W. 73d st
 Horace T. Hanks, 766 Madison av
 Thomas J. Harris, 117 E. 40th st
 Daniel Harrison, Whitestone
 George T. Harrison, 221 W. 23d st
 Forbes Hawkes, 42 E. 26th st
 James R. Hayden, 107 W. 55th st
 George D. Hays, 22 W. 120th st
 W. Sumner Hayward, Rochester
 Henry C. Hazen, 66 W. 56th st
 Henry Heiman, 220 E. 116th st
 Henry N. Heinemann, 3 E. 14th st
 Charles Heitzman, 39 W. 45th st
 Louis Heitzman, 110 E. 58th st
 Wm. R. Henderson, Yonkers
 J. Julio Henna, 8 W. 40th st
 Neil J. Hepburn, 369 W. 23d st
 Edgar M. Hermance, Yonkers
 Justin Herold, 173 E. 80th st
 Everett Herrick, 126 Madison av
 Christian A. Herter, 839 Madison av
 Emil Heuel, 352 Willis av

Franz Heuel, Jr., 26 Irving pl
 Thomas J. Hillis, 51 Charlton st
 Alfred K. Hills, 669 Fifth av
 John H. Hinton, 41 W. 32d st
 Joseph G. Hiron, 152 W. 49th st
 Urban G. Hitchcock, 51 W. 29th st
 Eugene Hodenpyl, 36 W. 56th st
 Abbott Hodgman, 141 E. 38th st
 John Van Hoff, Governor's Island
 Edward J. Hogan, 308 Madison av
 W. A. Holden, 45 W. 39th st
 Oscar H. Holder, 450 Madison av
 Thomas H. Holgate, 206 W. 14th st
 Austin W. Hollis, 111 W. 47th st
 L. Emmett Holt, 15 E. 54th st
 Oscar P. Honegger, 171 E. 71st st
 Fred E. Hopkins, 317 Main st,
 Springfield, Mass.
 George G. Hopkins, 350 Washing-
 ton av, Brooklyn
 J. Louis Hopkins, 233 W. 54th st
 J. Swinburne Hopkins, 150 W. 11th st
 George W. Hosmer, 41 E. 10th st
 H. Seymour Houghton, 301 W. 88th st
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 Leroy W. Hubbard, 161 W. 23d st
 S. Dana Hubbard, 79 W. 104th st
 Wm. N. Hubbard, 19 E. 38th st
 Francis Huber, 209 E. 17th st
 John B. Huber, 214 W. 44th st
 Joseph J. Hull, 64 W. 35th st
 Wm. A. Hume, 1517 Madison st,
 Toledo, Ohio
 Geo. H. Humphreys, 23 E. 47th st
 Joseph H. Hunt, Quincy st and
 Bedford av, Brooklyn
 Dwight W. Hunter, 222 W. 23d st
 George T. Hunter, 332 W. 33d st
 Frederick E. Hyde, 20 W. 53d st
 John A. Irwin, 14 W. 29th st
 Frank L. Ives, 117 E. 30th st
 Frank W. Jackson, 12 W. 18th st
 George T. Jackson, 14 E. 31st st
 Victor Hugo Jackson, 240 Lenox av
 Abraham Jacobi, 110 W. 34th st
 Mary Putnam Jacobi, 110 W. 34th st
 Nathan Jacobson, Syracuse
 Arthur M. Jacobus, 126 W. 48th st
 George W. Jacoby, 663 Madison av
 Walter B. James, 268 Madison av
 Edward G. Janeway, 36 W. 40th st
 Joseph E. Janvrin, 191 Madison av
 George W. Jarman, 61 W. 74th st
 Charles Jewett, 330 Clinton av,
 Brooklyn
 James H. Jolliffe, 105 W. 86th st
 Charles N. D. Jones, 502 W. 142d st

Israel C. Jones, Fordham
 S. Seabury Jones, 712 Madison av
 Adoniram B. Judson, 25 Madison av
 Champion H. Judson, Dobb's Ferry
 Kenneth F. Junor, 160 W. 29th st
 Moses S. Kakeles, 814 Lexington av
 Richard Kalish, 36 W. 47th st
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 Theodore H. Kellogg, Willard State
 Hospital, Willard
 James Edward Kelly, 117 E. 59th st
 Charles B. Kelsey, 25 Madison av
 William M. Kemp, 267 W. 23d st
 J. T. Kennedy, 107 E. 29th st
 Samuel Ketch, 72 W. 55th st
 Edward L. Keyes, 109 E. 34th st
 Eleanor B. Kilham, 5 Livingston pl
 Renel B. Kimball, 24 E. 41st st
 Francis P. Kinnicutt, 42 W. 37th st
 John S. Kirkendall, Ithaca
 Herman G. Klotz, 42 E. 22d st
 Herman Knapp, 26 W. 40th st
 John B. Knapp, 62 W. 51st st
 George S. Knickerbocker, 145 W.
 128th st
 Charles H. Knight, 147 W. 57th st
 George Knipe, 353 W. 24th st
 Samuel Kohn, 805 Madison av
 Henry Koplik, 66 E. 58th st
 Carl F. Kremer, 112 E. 57th st
 Henry Krollpfeiffer, 48 St. Mark's pl
 Florian Krug, 13 E. 41st st
 Louis J. Ladinski, 248 E. Broadway
 Alexander Lambert, 125 E. 36th st
 Edward W. Lambert, 2 E. 37th st
 Samuel W. Lambert, 2 E. 37th st
 Fred. E. Lange, 130 E. 61st st
 Gustav Langmann, 121 W. 57th st
 James R. Latham, 131 W. 11th st
 Louis M. Lavehart, Hempstead
 Charles A. Leale, 604 Madison av
 Wm. G. Le Boutillier, 49 W. 50th st
 Egbert Le Fevre, 161 W. 23d st
 George M. Lefferts, 6 W. 33d st
 Simeon N. Leo, 103 W. 55th st
 George W. Leonard, 102 W. 75th st
 Adolph M. Lesser, 56 E. 61st st
 Wm. M. Leszynsky, 959 Madison av
 Fred. J. Levisseur, 640 Madison av
 David C. Lewinthal, 154 Henry st
 Charles H. Lewis, 23 W. 61st st
 Daniel Lewis, 249 Madison av
 Frank N. Lewis, 36 E. 31st st
 Fred. W. Lilienthal, 306 E. 15th st
 Howard Lilienthal, 679 Madison av
 Rufus P. Lincoln, 22 W. 31st st
 Charles I. Lindley, 121 Madison av

Frieda E. Lippert, 53 Washington st
 Hersey G. Locke, 342 Lexington av
 Samuel Lloyd, 24 W. 50th st
 A. V. B. Lockrow, 7th av and 122d st
 Chas. E. Lockwood, 59 W. 35th st
 George R. Lockwood, 44 W. 49th st
 Henry P. Loomis, 58 E. 34th st
 William T. Lusk, 47 E. 34th st
 Patrick J. Lynch, 216 E. 13th st
 George S. Lynde, 636 Lexington av
 S. B. Lyon, White Plains
 Samuel K. Lyon, 312 Second av
 J. Milton Mabbott, 19 Fifth av
 R. K. Macalester, 108 E. 96th st
 D. Hunter McAlpin, 40 W. 40th st
 Charles McCurney, 28 W. 37th st
 John A. McCorkle, 149 Clinton st,
 Brooklyn
 Andrew J. McCosh, 22 E. 56th st
 Peter J. McCourt, 233 W. 23d st
 J. A. McCreery, 20 E. 54th st
 Alexander E. Macdonald, City Asy-
 lum (Ward's Island)
 George A. McDonald, 31 E. 67th st
 Timothy J. McGillicuddy, 776 Mad-
 ison av
 E. L. H. McGinnis, 55 W. 33d st
 Burnett C. MacIntyre, 146 W. 12th st
 William McKay, 40 E. 10th st
 James F. McKernon, 116 W. 48th st
 W. Duncan McKim, 751 Madison av
 James W. McLane, 51 W. 38th st
 Wm. M. McLaury, 244 W. 42d st
 Malcolm McLean, 29 E. 126th st
 Samuel B. W. McLeod, 247 W. 23d st
 John B. McMahon, 266 E. Broadway
 Nath. G. McMaster, 322 E. 15th st
 George McNaughton, 1 Cambridge
 place, Brooklyn
 Sarah J. McNutt, 265 Lexington av
 W. A. Macy, Ward's Island
 P. A. Malleson, 2014 Fifth av
 Henry A. Mandeville, 24 W. 40th st
 Morris Manges, 941 Madison av
 Thomas H. Manley, 115 W. 49th st
 Francis H. Markoe, 15 E. 49th st
 James W. Markoe, 15 E. 49th st
 James W. Markoe, 20 W. 30th st
 Thomas M. Markoe, 500 Madison av
 Wilbur B. Marple, 20 W. 31st st
 Simon Marx, 947 Madison av
 Lewis D. Mason, 171 Joralemon st,
 Brooklyn
 R. Osgood Mason, 348 W. 58th st
 Jansen B. Mattison, 188 Prospect
 place, Brooklyn
 Charles H. May, 692 Madison av
 Calvin S. May, 205 W. 57th st
 Abraham Mayer, 40 E. 60th st

Emil Mayer, 25 E. 77th st
 Alfred W. Maynard, 264 W. 42d st
 S. J. Meltzer, 66 E. 124th st
 Walter Mendelson, 159 W. 74th st
 Frank W. Merriam, 136 W. 11th st
 Alfred Meyer, 801 Madison av
 George Meyer, 47 E. 61st st
 Willy Meyer, 700 Madison av
 L. M. Michaelis, 1090 Lexington av
 Robert Milbank, 154 W. 48th st
 Charles Milne, 124 E. 45th st
 John C. Minor, 10 E. 41st st
 Ramon L. Miranda, 349 W. 46th st
 H. W. Mitchell, 747 Madison av
 Wm F. Mittendorf, 140 Madison av
 Henry Moeller, 240 W. 38th st
 Henry Moffat, 89 Ashburton av
 Yonkers
 S. H. Monell, 865 Union st, Brooklyn
 W. Oliver Moore, 83 Madison av
 Benjamin Morje, 181 E. 71st st
 Lewis R. Morris, 35 W. 36th st
 Robert T. Morris, 49 W. 39th st
 P. Albert Morrow, 66 W. 40th st
 W. Golden Mortimer, 149 W. 66th st
 William J. Morton, 19 E. 28th st
 Gustave Mourraille, 74 W. 12th st
 Paul F. Mundé, 20 W. 45th st
 John P. Munn, 18 W. 58th st
 George E. Munroe, 43 E. 33d st
 Frank W. Murray, 32 W. 39th st
 Robert A. Murray, 112 W. 80th st
 T. Halstead Myers, 24 W. 50th st
 Robert C. Myles, 46 W. 38th st
 John T. Nagle, 47 E. 21st st
 Charles E. Nammack, 42 E. 29th st
 George G. Needham, 218 E. 19th st
 William B. Neftel, 16 E. 48th st
 Albert W. Neufeld, 237 E. Broadway
 Albert S. Newcomb, 206 W. 71st st
 James E. Newcomb, 118 W. 69th st
 James A. Nichols, 133 W. 34th st
 James E. H. Nichols, 4 E. 43d st
 Truman Nichols, 267 E. Broadway
 Curt E. H. Nicolai, 229 E. 119th st
 Henry D. Nicoll, 51 E. 57th st
 Jonas R. Nilsen, 69 W. 50th st
 John G. Noble, 222 W. 34th st
 Henry S. Norris, 123 W. 34th st
 J. Harper North, Jr., Union Club
 William P. Northrup, 57 E. 79th st
 Henry D. Noyes, 233 Madison av
 Joseph O'Dwyer, 967 Lexington av
 Robert Offenbach, 825 Lexington av
 Nathan Oppenheim, 108 W. 47th st
 Henry S. Oppenheimer, 49 E. 23d st
 Isaac Oppenheimer, 60 E. 67th st
 Fessenden N. Otis, 5 W. 50th st
 William K. Otis, 5 W. 50th st

Charles W. Packard, 447 Park av
 R. Channing M. Page, 31 W. 33d st
 Charles I. Pardee, 6 E. 43d st
 Roswell Park, Buffalo
 W. H. Park, 128 W. 11th st
 Willard Parker, 55 Fifth av
 Angenette Parry, 35 Mt. Morris av
 John Parsons, Kingsbridge
 Ralph L. Parsons, Sing Sing
 Ralph W. Parsons, Sing Sing
 Edward L. Partridge, 19 Fifth av
 Stewart Paton, 596 Lexington av
 Frank N. Patterson, 149 E. 34th st
 S. M. Payne, 327 Madison av
 George L. Peabody, 57 W. 38th st
 Daniel P. Pease, Hoffman House
 Edward S. Peck, 53 W. 50th st
 Grace Peckham-Murray, 25 Madison av
 Edward W. Peet, 20 W. 43d st
 Henry T. Pierce, 272 Lenox av
 Joseph F. Perkins, St. James Hotel
 James L. Perry, 79 W. 47th st
 John G. Perry, 48 E. 34th st
 Frederick Peterson, 60 W. 50th st
 Alfred G. Pfeiffer, 236 E. 53d st
 Abel M. Phelps, 40 W. 34th st
 Charles Phelps, 34 W. 37th st
 Wendell C. Phillips, 350 Madison av
 Henry G. Piffard, 10 W. 35th st
 Burke Pillsbury, Middletown
 William M. Polk, 7 E. 36th st
 John O. Polak, 23 7th av, Brooklyn
 Sigismund Pollitzer, 32 E. 60th st
 Oren D. Pomeroy, 316 Lexington av
 Thomas R. Pooley, 107 Madison av
 W. Evelyn Porter, 50 W. 33d st
 Wm. Henry Porter, 73 William st
 James Lindsay H. H. Porteous, 88 Warburton av, Yonkers
 Seneca D. Powell, 12 W. 40th st
 Wm. B. Pritchard, 347 W. 58th st
 Jonathan S. Prout, 26 Schermerhorn st, Brooklyn
 T. Mitchell Prudden, 160 W. 59th st
 William R. Pryor, 15 Park av
 W. J. Pulley, 227 E. 86th st
 Alfred E. M. Purdy, 304 Madison av
 Samuel S. Purple, 36 W. 22d st
 Leopold Putzel, 13 E. 57th st
 Patrick H. Pyne, 154 Nepperhan av, Yonkers
 John D. Quackenbos, 331 W. 28th st
 Charles E. Quimby, 44 W. 36th st
 Francis J. Quinlan, 54 W. 17th st
 Edward Quintard, 145 W. 58th st
 Ambrose L. Ranney, 156 Madison av
 Fred. M. Ranney, 360 W. 51st st
 Charles C. Ransom, 152 W. 48th st

Leonard S. Rau, 72 W. 55th st
 F. C. Raynor, 163 Clinton st, Brooklyn
 Ira B. Read, 66 E. 126th st
 John J. Reid, 853 Lexington av
 Meyer L. Rhein, 38 E. 61st st
 Clarence C. Rice, 123 E. 19th st
 M. R. Richards, 77 E. 116th st
 Charles H. Richardson, 417 Lexington av
 John E. Richardson, 127 S. Oxford st, Brooklyn
 Frederick C. Riley, 14 E. 29th st
 Frank W. Ring, 101 Park av
 Nathan S. Roberts, 879 Lexington av
 Andrew R. Robinson, 248 W. 42d st
 Beverly Robinson, 37 W. 35th st
 Thomas M. Rochester, 2 St. James place, Brooklyn
 Alphonso D. Rockwell, 113 W. 34th st
 L. A. Rodenstein, 908 St. Nicholas av
 John O. Roe, 28 N. Clinton st, Rochester
 Willard H. Rogers, 225 W. 22d st
 D. B. St. John Roosa, 20 E. 30th st
 Achilles Rose, 336 E. 15th st
 William H. Ross, 262 Lenox av
 Alvah Rowe, 349 W. 34th st
 Julius Rudisch, 121 E. 60th st
 Adolph Rupp, 406 W. 34th st
 Gustavus A. Sabine, 8 E. 24th st
 Bernard Sachs, 21 E. 65th st
 Robert A. Sands, 39 E. 33d st
 Luis F. Sass, 56 W. 39th st
 F. Le Roy Satterlee, 8 W. 18th st
 Thos. E. Satterthwaite, 531 5th av
 Lewis A. Sayre, 285 Fifth av
 Reginald H. Sayre, 285 Fifth av
 Ernest Schalck, 157 W. 103d st
 Barnim Scharlau, 66 W. 35th st
 John Schmitt, 233 E. 13th st
 C. P. R. Schoenemann, 324 Lexington av
 Gustav Scholer, 311 W. 48th st
 Charles Schram, 1074 Madison av
 George Scott, 102 W. 75th st
 Henry H. Seabrook, 118 E. 72d st
 Louis L. Seaman, 18 W. 31st st
 William S. Seamans, 16 W. 52d st
 Edward C. Seguin, 47 W. 50th st
 August Seibert, 114 E. 57th st
 Edward H. M. Sell, 137 W. 94th st
 Frederick S. Sellow, 61 E. 79th st
 Newton M. Shaffer, 28 E. 38th st
 Samuel Sherwell, 33 Schermerhorn st, Brooklyn
 George F. Shrady, 8 E. 66th st
 John Shrady, 149 W. 126th st
 Albert Shunk, 232 W. 22d st
 Henry M. Silver, 39 7th st

Lewis Mann Silver, 103 W. 72d st
 Chas. E. Simmons, 742 Lexington av
 Wm. K. Simpson, 952 Lexington av
 H. Marion Sims, 30 W. 58th st
 Frank D. Skeel, 361 Mott av
 Alexander J. C. Skene, 167 Clinton
 st, Brooklyn
 George W. Smallwood, 104 W. 84th st
 Abram A. Smith, 40 W. 47th st
 Andrew H. Smith, 15 E. 38th st
 Edw. Franklin Smith, 257 W. 44th st
 George De F. Smith, 20 E. 29th st
 Gouverneur M. Smith, 14 E. 17th st
 J. Lewis Smith, 64 W. 56th st
 Judson C. Smith, 228 E. 19th st
 Oscar G. Smith, 130 Washington pl
 Stephen Smith, 574 Madison av
 Frederic E. Soudern, 200 W. 56th st
 T. S. Southworth, 47 W. 56th st
 George A. Spalding, 248 Lenox av
 D. B. Spence, 559 W. 185th st
 James D. Spence, Watertown
 H. E. Stafford, 8 E. 34th st
 Henry S. Stark, 151 E. 72d st
 M. Allen Starr, 22 W. 48th st
 Henry S. Stearns, 21 E. 44th st
 Thos. L. Stedman, 327 Amsterdam av
 Alexander W. Stein, 30 W. 15th st
 William Stevens, 133 W. 41st st
 Douglas H. Stewart, 111 W. 64th st
 G. D. Stewart, 130 E. 36th st
 John E. Stillwell, 151 E. 22d st
 Charles W. Stimson, 69 W. 69th st
 Daniel M. Stimson, 11 W. 17th st
 Lewis A. Stimson, 34 E. 33d st
 Gustav M. Stoeckel, 260 W. 42d st
 William L. Stowell, 28 W. 36th st
 A. Russell Strachan, 25 E. 30th st
 W. Stratford, 245 W. 52d st
 Francis H. Stuart, 128 Joralemon st,
 Brooklyn
 William Stubenbord, 219 W. 88th st
 Frederic R. Sturgis, 16 W. 32d st
 A. Walter Suiter, Herkimer
 Fremont Swain, 120 E. 86th st
 Wm. F. Swalm, 118 Lafayette av,
 Brooklyn
 John H. Swasey, 34 E. 28th st
 Edwin E. Swift, 112 W. 81st st
 George M. Swift, 29 E. 31st st
 Samuel Swift, Yonkers
 William J. Swift, 40 E. 30th st
 George K. Swinburne, 68 W. 46th st
 Ralph E. Swinburne, 123 W. 121st st
 Brandreth Symonds, 128 W. 59th st
 Parker Syms, 60 W. 47th st
 Charles F. Taylor, 201 W. 54th st
 Henry L. Taylor, 117 W. 55th st
 Robert W. Taylor, 40 W. 21st st

J. Teschner, 134 E. 61st st
 John S. Thacher, 33 W. 39th st
 J. W. H. Thelberg, 10 W. 33d st
 Allen M. Thomas, 61 W. 54th st
 T. Gaillard Thomas, 600 Madison av
 W. Gilman Thompson, 34 E. 31st st
 William H. Thomson, 7 W. 56th st
 William Thurman, 107 W. 86th st
 S. W. Spencer Toms, Bellport
 Franz J. A. Torek, 699 Madison av
 Sinclair Tousey, 29 W. 38th st
 Wisner R. Townsend, 28 W. 59th st
 Arthur B. Townshend, 22 W. 32d st
 E. Clark Tracy, 27 E. 126th st
 Roger S. Tracy, 74 W. 46th st
 E. L. Trudeau, Saranac Lake
 Henry Tuck, 39 E. 53d st
 Carlos P. Tucker, 43 W. 26th st
 Erven Alden Tucker, 57 W. 53d st
 E. Emory Tull, 119 W. 80th st
 George M. Tuttle, 49 W. 38th st
 James P. Tuttle, 35 W. 45th st
 Henry H. Tyson, Jr., 47 W. 51st st
 Francis Valk, 163 E. 37th st
 Ferdinand C. Valentine, 242 W. 43d st
 Wm. W. Van Arsdale, 32 W. 33d st
 Bina Potter Vandenberg, Jackson's
 Sanatorium, Dansville, N. Y.
 Horace C. Vandenberg, 126 E. 45th st
 John Van der Poel, 36 W. 39th st
 S. Oakley Van der Poel, 47 E. 25th st
 Waldron B. Vanderpoel, 106 E. 24th st
 Frank Van Fleet, 116 E. 82d st
 Ira Van Gieson, 94 Kent st, Brooklyn
 Richard Van Santvoord, 106 W.
 122d st
 Wm. W. Van Valzah, 10 E. 43d st
 Maus R. Vedder, 690 Madison av
 Agnes C. Victor, 61 W. 96th st
 Hiram N. Vineberg, 127 E. 61st st
 Caesar A. von Ramdohr, 45 Irving pl
 Ralph Waldo, 68 W. 50th st
 Louis Waldstein, 450 Madison av
 D. Ernest Walker, 215 W. 43d st
 Henry F. Walker, 8 E. 30th st
 John B. Walker, 33 E. 33d st
 L. Pope Walker, 25 E. 24th st
 Joseph G. Wallech, 7 W. 82d st
 Josephine Walter, 101 W. 75th st
 Edwin F. Ward, 29 W. 36th st
 George G. Ward, Jr., 325 W. 58th st
 Albert W. Warden, 130 W. 104th st
 Edward J. Ware, 121 W. 93d st
 Everett S. Warner, 117 E. 26th st
 John W. Warner, 107 E. 72d st
 John Warren, 47 E. 30th st
 John S. Warren, 150 W. 48th st
 James S. Waterman, 530 Nostrand
 av, Brooklyn

Leonard Weber, 25 W. 46th st
David Webster, 327 Madison av
John E. Weeks, 154 Madison av
Robert F. Weir, 37 W. 33d st
Faneuil D. Weiss, 46 W. 20th st
Julius Weiss, 329 W. 28th st
Brooks H. Wells, 71 W. 45th st
Sarah Welt-Kakles, 814 Lexington av
Edmund C. Wendt, 118 W. 79th st
Frank E. West, 29 Schermerhorn st,
Brooklyn
W. H. Weston, 400 W. 22d st
George G. Wheelock, 75 Park av
Charles B. White, 107 W. 72d st
Granville M. White, 272 W. 77th st
J. Blake White, 1013 Madison av
Octavius A. White, 1013 Madison av
Royal Whitman, 126 W. 59th st
Joseph Wiener, 1046 Fifth av
Rudolph G. Weiner, 48 E. 65th st
Frederick H. Wiggins, 55 W. 36th st
Reynold W. Wilcox, 749 Madison av
Thomas H. Willard, Madison av and
23d st

Herbert F. Williams, 363 Grand av,
Brooklyn
Mark H. Williams, 227 W. 185th st
Gustavus S. Winston, 42 W. 39th st
Joseph E. Winters, 36 W. 32d st
Rudolph A. Witthaus, 303 W. 77th st
Charles S. Wood, 137 W. 47th st
William B. Wood, 22 E. 41st st
J. McGaw Woodbury, 28 W. 20th st
George Woolsey, 49 E. 30th st
Herbert W. Wootten, 417 Lexington av
Jonathan Wright, 73 Remsen st,
Brooklyn
J. Williston Wright, 143 W. 81st st
Frederick W. Wunderlich, 165 Remsen st, Brooklyn
John A. Wyeth, 27 E. 38th st
Robert H. Wylie, 215 W. 43d st
W. Gill Wylie, 28 W. 40th st
Leroy M. Yale, 432 Madison av
J. Van Doren Young, 108 W. 75th st
William Young, Cold Spring
Adolph Zeh, 243 W. 52d st
Number of Resident Fellows, 790.

MEDICAL SOCIETY OF THE COUNTY OF NIAGARA.

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in January; quarterly, first Tuesday in April and September.

Officers. (June, 1896.)

M. S. Kittinger, *President*.
H. H. Mayne, *Secretary*.

E. W. Wollaber, *Vice-President*.
John Foote, *Treasurer*.

Censors: A. N. Moore,
Walter McChesney,

T. B. Cosford, F. J. Baker,
H. A. Wilmot.

Committee on Hygiene:

A. N. Moore, *Chairman*.
M. S. Kittinger,
Peter Faling,

F. J. Baker,
G. C. Clark,
T. B. Cosford,

Walter McChesney,
H. C. Hill,
M. H. Cole.

Delegates to State Medical Society: T. B. Cosford, F. A. Kittinger.

Members.

F. J. Baker, Lockport
J. W. Bickford, Lockport
W. L. Bosserman, Ransomville
Frederick T. Carmer, Rapids
Gardiner C. Clark, Niagara Falls
M. H. Cole, Newfane
J. W. Corman, Beach Ridge
T. B. Cosford, Lockport
F. C. Durand, Lockport
G. W. Eddy, Lewiston
Peter Faling, Gasport

W. J. Falkner, Youngstown
John Foote, Lockport
J. B. Hartwell, Lockport
J. H. Helmer, Lockport
L. J. Hixson, Laselle
H. C. Hill, Lockport
W. H. Hodson, Lockport
W. Q. Huggins, Sanborn
F. A. Kittinger, Lockport
M. S. Kittinger, Lockport
William Lane, Newfane Station

Allen T. Leonard, Tonawanda
 M. L. Lang, Niagara Falls
 W. H. Loomis, Lockport
 Walter McChesney, Tonawanda
 B. I. Manchester, Royalton
 H. H. Mayne Lockport
 A. N. Moore Lockport
 D. H. Murphy, Royalton
 C. N. Palmer, Lockport

W. J. Ransom, Lockport
 Wm. C. Raymond, Cambria
 W. B. Rice Lockport
 E. N. S. Ringueberg, Lockport
 C. H. Turner, Medina
 H. A. Wilmot, Middleport
 E. W. Wollaber, Cambria
 W. C. Wood, Lockport
 Number of Members, 89.

Deceased: Frank Gaskill, Wilson.

MEDICAL SOCIETY OF THE COUNTY OF ONEIDA.

MEETINGS—Annual, second Tuesday in April; semi-annual, second Tuesday in October; quarterly, second Tuesday in July and January. The semi-annual meeting is held in Rome; the others in Utica.

Officers. (April, 1896.)

D. C. Dye, *President.* Charles G. Ward, *Vice-President.*
 David S. Eynon, *Secretary.* Herbert G. Jones, *Treasurer.*
 W. H. Booth, *Librarian.*

Censors: Thos. M. Flandrau, A. R. Simmons, W. A. Burgess,
 W. E. Wetmore, Wales Buel.

Committee on Hygiene:

W. J. Schuyler, W. M. Towsley, M. W. Hunt,
 T. G. Nock, T. Z. Jones.

Delegates to State Medical Society: S. C. Maxson, Chas. E. Smith,
 F. H. Peck.

Members.

(Where no town is mentioned Utica is to be understood.)

B. P. Allen, Oriskany
 Charles G. Bacon, Camden
 Smith Baker, Rowland's building
 M. M. Bagg, 6 Pearl st
 D. A. Barnum, Cassville
 F. M. Barrows, Clinton
 P. J. Barrett, Utica
 H. G. Bartlett, Oriskany Falls
 Thomas J. Bergen, 93 John st
 G. Alder Blumer, State Hospital
 W. H. Booth, Rowland's building
 H. C. Bradford, Westernville
 F. H. Brewer, Utica
 A. V. J. Browne, Carlile building
 Henry E. Brown, Utica
 W. H. Brownell, Utica
 Wales Buell, Walesville
 W. A. Burgess, 238 Genesee st
 P. J. Campbell, Utica
 Martin Cavana, Oneida, Madison Co.
 Alonzo Churchill, Parker block
 Wallace Clarke, 136 Park av

Ira M. Comstock, New York Mills
 Mathias Cooke, 92 Columbia st
 T. H. Cox, Lee Centre
 Delos A. Crane, Holland Patent
 C. W. Crumb, Utica
 M. J. Davies, Utica
 William R. Davis, Utica
 A. P. Dodge, Oneida Castle
 C. V. J. Doolittle, Bridgewater
 James W. Douglass, Boonville
 Frederick J. Douglass, Utica
 H. G. Dubois, Camden
 W. C. Duke, Forestport
 D. C. Dye, Carlile building
 Eliza M. Ellenwood, Rome
 G. P. English, Boonville
 D. S. Eynon, Utica
 G. M. Fisher, Clayville
 Thomas M. Flandreau, Rome
 W. E. Ford, 266 Genesee st
 Charles E. Fraser, Rome
 Charles E. Fraser, Jr., Rome

Jefferson C. Fraser, Lee
 Conway Frost, Clinton
 Earl D. Fuller, 148 Columbia st
 F. A. Gary, Vernon
 W. C. Gibson Utica
 William M. Gibson, 260 Genesee st
 S. L. Gifford, Whitesboro
 A. A. Gillette, Rome
 J. H. Glass, 246 Genesee st
 Francis T. Gorton, Waterville
 W. W. Gray, Auburn
 W. R. Griswold, New Hartford
 V. B. Hamlin, Clinton
 Joseph V. Harberer, 66 Miller st
 C. R. Hart, New Hartford
 W. J. Harrer, Utica
 Thomas Hays, Deerfield, office Utica
 Robert H. Hews, North Western
 J. D. Hilton, Washington Mills
 A. L. Holden 132 South st
 Ira D. Hopkins, 25 Blandina st
 Henry R. Hughes, Clinton
 J. G. Hunt, 192 Genesee st
 Myron W. Hunt, Holland Patent
 E. M. Hyland, 221 Genesee st
 William M. James, 166 Genesee st
 Herbert G. Jones, Utica
 J. D. Jones, Utica
 James E. Jones, Clayville
 H. W. Jones, Waterville
 L. H. Jones, Utica
 M. B. Jones, Camden
 Thomas Z. Jones, Waterville
 William W. Jones, Whitesboro
 Judson G. Kilbourn, 247 Genesee st
 George A. Krug, Utica
 William Kuhn, Rome
 William Mabon, State Hospital
 James McCullough, Remsen
 Juliette E. Marchant, Rome
 W. R. Marsden, Utica
 A. W. Marsh, Oriskany Falls
 S. C. Maxson, Utica
 G. Leroy Menzie, Vernon
 Charlotte L. Merrick, Utica
 James Middleditch, Rome
 T. M. Miller, Deerfield
 Charles Munger, Knoxboro
 William H. Nelson, Taberg
 H. Nicholas, North Bay
 Thomas G. Nock, Jr., Rome
 John B. Nold, Utica
 L. F. Pattingil, 221 Genesee st
 H. C. Palmer, 253 Genesee st
 H. L. Palmer, Utica State Hospital
 W. B. Palmer, 30 South st
 F. H. Peck, Utica
 Johnson Pillmore, Delta
 G. J. Pollard, Oriskany Falls
 William Powell, Utica
 H. Frank Preston, Utica
 Medina Preston, Sangerfield
 Hamilton S. Quin, 238 Genesee st
 William S. Ralph, 26 Court st
 Edwin W. Raynor, Utica
 C. C. Reid, Rome
 H. G. Reid, Westonville
 Lafayette Rinkle, Boonville
 D. H. Roberts, Trenton
 J. Ross, Utica
 Charles P. Russell, 196 Genesee st
 Stephen P. Russell, Ava
 W. D. Russell, New Hartford
 W. J. Schuyler, 266 Genesee st
 Thomas P. Scully, Rome
 George Seymour, 227 Genesee st
 Charles W. Shaver, Florence
 H. E. Shumway, Utica
 A. R. Simmons, Utica
 Hugh Sloan, 142 Columbia st
 A. H. Smith, Camden
 Charles E. Smith, Whitestown
 Witmore Steele, Utica State Hospital
 Edward J. Stevens, 183 Genesee st
 Henry C. Sutton, Rome
 R. E. Sutton, Rose
 L. Swartwout, Prospect
 Charles B. Tefft, Utica
 Louis A. Tourtellot, 40 Broad st
 William M. Towsley, Camden
 F. P. Utley, Deansville
 T. A. Vedder, 29 Oneida
 Charles G. Ward, Utica
 Charles R. Weed, 226 Genesee st
 C. B. West, Rome
 Joseph E. West, 379 Genesee st
 W. E. Wetmore, Utica
 James H. Whaley, Rome
 E. G. Williams, Remsen
 Hiram K. Worden, Westmoreland
 Number of Members, 143.

Deceased: Claude Wilson, Waterville, April 20, 1896, æt. 48.

MEDICAL SOCIETY OF THE COUNTY OF ONONDAGA.

(Organized in 1806.)

MEETINGS—Annual, second Tuesday in May; semi-annual, third Tuesday in December; quarterly, at such intermediate times as the Society may direct. All meetings are held at Syracuse.

Officers. (May, 1896.)

D. H. Murray, *President.*
E. J. Wynkoop, *Secretary.*

G. E. Clark, *Vice-President.*
Margaret Stanton, *Treasurer.*

Delegates to State Medical Society : T. H. Halsted, F. W. Slocum,
F. W. Sears, D. H. Murray.

Members.

(Where the town is not mentioned Syracuse is to be understood.)

Robert Aberdein, 2 Greeley block
Henry B. Allen, 326 Montgomery st
W. J. Ayling, 318 Mulberry st
Theresa Bannan, 503 Warren st
John A. Belch, W. Calvin
E. W. Belknap, E. Genesee st
A. C. Benedict, 334 Montgomery st
Charles H. Benson, Seymour st
C. E. Billington, 614 E. Fayette st
A. B. Breece, 400 E. Genesee st
G. L. Brown, Euclid
U. Higgins Brown, 312 Warren st
John W. Brown, Mottville
J. H. Burch, Baldwinsville
D. W. Burdick, Syracuse
F. H. Butler, 204 Seymour st
A. J. Campbell, 333 Warren st
James E. Carr, Jordan
J. C. Carson, State Asylum
B. T. Chase, East Syracuse
George E. Clark, Skaneateles
Gaylord P. Clark, W. Genesee st
Frank R. Coe, Warners
J. H. Coe, 804 E. Genesee st
Allen Cone, Elbridge
Geo. W. Cook, Syracuse House block
Charles A. Covell, S. Salina st
S. Ellis Crane, Onondaga Valley
S. Boyce Craton, James st
William A. Curtin, E. Fayette st
A. J. Dallis, 340 Warren st
Chas. N. Daman, 621 E. Genesee st
L. P. Deming, 332 Montgomery st
O. G. Dibble, Pompey
H. D. Didama, 424 S. Salina st
F. O. Donohue, 410 Warren st
A. G. Doust, Delaware st
Gregory Doyle, 307 W. Genesee st
William H. Dwinell, Tully
Thomas B. Dwyer, 624 Harrison st
A. S. Edwards, 1506 N. Salina st
G. A. Edwards, S. Salina st
H. L. Elsner, Fayette place
F. G. Englehardt, N. Salina st
J. T. D. Fischer, Butternut st
M. B. Fairchild, 1305 N. Salina st
J. W. Fry, 1 Griffin block, Lock st
M. H. Fuller, Jefferson st

T. H. Halsted, 427 S. Salina st
Juliet E. Hanchett, 601 Warren st
R. C. Hanchett, 3 Joy building
John R. Harding, Genesee st
Carrie A. Hatch, 110 Onondaga st
Hiram B. Hawley, N. Salina st
A. D. Head, 202 E. Genesee st
George T. Head, 107 W. Kennedy st
C. E. Heaton, Baldwinsville
J. L. Heffron, 448 S. Salina st
Mrs. E. J. Holcomb, 501 E. Fayette st
Nathan Jacobson, 430 S. Salina st
W. R. Johnson, 19 Yates block
Joel G. Justin, 501 E. Fayette st
J. F. Kaufman, Church st
D. A. Kellogg, Navarino
W. C. Kellogg, Grace st
J. V. Kendall, Baldwinsville
George R. Kinne, 626 Gifford st
J. W. Knapp, 432 W. Genesee st
Jonathan Kneeland, S. Onondaga
J. Harris Levy, Warren st
B. W. Loomis, S. Salina st
G. Griffith Lewis, Warren st
Charles E. McClary, 110 South av
D. J. McLaughlin, Skaneateles Falls
R. C. McLennan, 414 S. Salina st
Frank McMorow, The Durston
C. M. Magee, cor. West & Seymour sts
F. W. Marlow, 401 Montgomery st
A. W. Marsh, E. Syracuse
Edwin R. Maxson, 818 Madison st
E. S. Maxson, 818 Madison st
William H. May, 800 E. Fayette st
W. H. Maynard, 358 Delaware st
Alfred Mercer, 324 Montgomery st
A. C. Mercer, 324 Montgomery st
E. B. Merwin, Camillus
H. D. Merwin, Cicero
A. B. Miller, 326 Montgomery st
E. L. Mooney, 416 Warren st
J. A. Mowris, Lafayette
E. S. Mumford, 513 E. Fayette st
J. F. Munn, 329 Warren st
W. W. Munson, Otisco
D. H. Murray, 426 James st
W. M. F. Nelson, 108 Harrison st
Horace Nims, Manlius

O. W. Oberlander, 310 Ash st
 Scott Owen, 223 Montgomery st
 Charles L. Parker, Onondaga
 Israel Parsons, Marcellus
 H. H. Pease, 320 Montgomery st
 L. K. Peck, 907 N. Alvord st
 W. T. Plant, 222 Harrison st
 J. D. Potter, Delphi
 George M. Price, 704 Catharine st
 A. B. Randall, 420 Warren st
 Gregory Reidy, Clinton block
 H. E. Richardson, E. Syracuse
 C. S. Roberts, 7 Clinton place
 John H. Robson, Elbridge
 Arthur B. Rood, Minoa
 M. G. Rood, 422 Warren st
 Joseph C. Roth, 435 Gifford st
 Mrs. E. H. Runion, 303 E. Onondaga st
 Frank J. Rupp, 717 Catharine st
 Kate Hathaway Salmon, Syracuse
 E. S. Sampson, North Syracuse
 L. A. Saxer, 514 Prospect av
 F. W. Sears, cor. Warren and Onondaga sts
 John C. Shoudy, Syracuse
 J. P. Shumway, 5 Emerson av
 E. C. Skinner, E. Syracuse
 I. M. Slingerland, Fayetteville

F. W. Slocum, Camillus
 Clara Smith, Utica, N. Y.
 F. W. Smith, S. W. cor. Gifford st
 William M. Smith, 138 Holland st
 S. F. Snow, 117 E. Jefferson st
 Margaret Stanton, 104 Marshall st
 F. H. Stephenson, 307 Warren st
 F. A. Strong, Brewerton
 O. A. Thomas, 818 S. Salina st
 H. P. Tolman, Onondaga Valley
 D. M. Totman, 303 Montgomery st
 V. n Dyke Tripp, Borodino
 A. F. Vadeboncœur, 354 Green st
 Eli Van de Warker, 404 Genesee st
 John Van Duyn, James st
 Gervasse M. Wasse, Baldwinsville
 Lewis F. Weaver, 121 Green st
 H. A. Weed, Jordan
 Charles E. Weidman, Marcellus
 W. J. Werfleman, 908 N. Salina st
 James Whitford, Onondaga Valley
 R. A. Whitney, Liverpool
 Hiram Wiggins, Elbridge
 M. J. Williams, Jordan
 N. Wilbur, Fayetteville
 C. F. Wright, 403 Warren st
 H. B. Wright, Skaneateles
 E. J. Wynkoop, 406 James st
 Number of Members, 157.

Honorary Members: W. S. Cheesman, Auburn; Wendell C. Phillips, New York; A. A. Young, Newark; J. W. Knapp, Canastota.

Deceased: J. P. Dunlap, Syracuse, March 29, 1896, æt. 82; William H. Dunlap, Syracuse.

MEDICAL SOCIETY OF THE COUNTY OF ONTARIO.

MEETINGS.—Annual, second Tuesday in July; quarterly, second Tuesday in October, January, and April.

Officers. (July, 1895.)

O. J. Hallenbeck, *President.* J. P. Delaney, *Vice-President.*
 A. L. Beahan, *Secretary and Treasurer.*

Delegate to State Medical Society: B. C. Loveland.

Members.

A. D. Allen, Gorham
 D. S. Allen, Hall's Corners
 J. H. Allen, Gorham
 A. L. Beahan, Canandaigua
 F. P. Bell, Naples
 F. R. Bentley, Cheshire
 H. C. Buell, Canandaigua
 D. R. Burrell, Canandaigua
 J. B. Burroughs, Shortsville

M. R. Carson, Canandaigua
 William B. Clapper, Farmington
 J. Pope Delaney, Geneva
 J. F. Draper, Victor
 H. M. Eddy, Geneva
 Edwin Gillette, Canandaigua
 O. J. Hallenbeck, Canandaigua
 W. G. Hemiup, Geneva
 W. S. Hicks, Bristol

P. P. Howe, Shortaville
 W. A. Howe, Phelps
 John Hutchins, Cheshire
 C. O. Jackson, Victor
 J. H. Jewett, Canandaigua
 B. C. Loveland, Clifton Springs
 F. E. McClellan, Canandaigua
 C. D. McCarthy, Geneva
 B. F. McDowell, Canandaigua
 D. J. Mallery, Bristol
 A. M. Mead, Victor
 C. R. W. Merritt, Clifton Springs
 J. R. Pratt, Manchester

John H. Pratt, Manchester
 John A. Robson, Hall's
 T. D. Rupert, Geneva
 George W. Sargent, Seneca Castle
 E. B. Sayre, Allen's Hill
 T. W. Spaulding, Clifton Springs
 H. B. Strong, Geneva
 C. C. Thayer, Clifton Springs
 F. D. Vanderhoof, Phelps
 G. H. Van Deusen, Stanley
 S. B. Weitling, Naples
 S. R. Wheeler, E. Bloomfield
 L. F. Wilbur, Honeoye
 Number of Members, 45.

MEDICAL SOCIETY OF THE COUNTY OF ORANGE.

(Organized July 1, 1806.)

MEETINGS.—Annual, first Tuesday in May; semi-annual, first Tuesday in October.

Officers. (May, 1896.)

Joseph B. Hulett, *President*.
 Theo. D. Mills, *Secretary*.

A. V. Jova, *Vice-President*.
 D. T. Conduct, *Treasurer*.

Censors: H. H. Robinson,
 W. S. Gleason,

D. B. Smiley, W. T. Seeley,
 H. B. Swartout.

Committee on Hygiene: Chas. E. Townsend, C. W. Banks, J. D. Brownell.

Committee on Admissions: T. D. Mills, W. L. Cuddeback, R. V. K. Montfort.

Publishing Committee: A. E. Adams, T. D. Mills, J. T. Howell.

Committee of Science: J. B. Hulett, C. W. Banks, W. E. Douglas.

Auditing Committee: H. H. Robinson, A. P. Farries, W. I. Purdy.

Delegates to State Medical Society: A. V. Jova, D. T. Conduct; *Alternates:* A. L. Browne, D. G. Lippincott.

Members.

A. E. Adams, Newburgh
 C. W. Banks, Port Jervis
 William Beattie, Cornwall
 George S. Bond, Washingtonville
 H. K. Bradner, Warwick
 W. B. Bradner, Warwick
 E. F. Brooks, Newburgh
 A. L. Browne, Cornwall
 G. Herbert Brown, Highland Falls
 C. W. Butler, Cornwall
 S. G. Carpenter, Chester
 D. T. Conduct, Goshen
 Clinton G. Cooley, Montgomery
 James C. Coleman, Goshen
 William L. Cuddeback, Port Jervis
 H. O. Davis, Howells
 F. W. Dennis, Unionville

William E. Douglas, Middletown
 S. D. Dubois, Blooming Grove
 E. Ross Elliott, Montgomery
 E. S. Elmer, Central Valley
 G. A. Emory, Middletown
 William Evans, Westtown
 Harvey Everett, Middletown
 A. P. Farries, Florida
 W. F. Gleason, Newburgh
 Thomas S. Gillson, Middletown
 A. M. Goodman, Jr., Salisbury
 Lewis Hanmore, Newburgh
 Daniel B. Hardenbergh, Middletown
 H. Hardenbergh, Port Jervis
 John T. Howell, Newburgh
 Joseph B. Hulett, Middletown
 C. N. Knapp, Port Jervis

A. V. Jova, Newburgh
 D. G. Lippincott, Campbell Hill
 T. D. Mills, Middletown
 J. Moffat, Washingtonville
 R. V. K. Montfort, Newburgh
 F. D. Myers, Slate Hill
 William J. Nelson, Middletown
 E. A. Nugent, Unionville
 J. B. Peters, Walden
 L. R. Pierce, Newburgh
 B. Pillsbury, Middletown
 E. Potts, Port Jervis
 Willis I. Purdy, Middletown
 Charles I. Redfield, Middletown
 H. H. Robinson, Goshen

A. Santee, Scotchtown
 W. T. Seeley, Amity
 Charles Skinner, Port Jervis
 D. B. Smiley, Middletown
 C. P. Smith, Jr., Chester
 David H. Sprague, Central Valley
 Hugh M. Struble, Middletown
 Henry B. Swartout, Port Jervis
 Robert Taylor, Otisville
 Charles E. Townsend, Newburgh
 J. H. Thompson, Goshen
 James Wood, Newburgh
 W. H. Woodruff, Pine Bush
 Warren Worcester, Middletown
 Theodore Writer, Otisville
 Number of Members, 64.

Deceased: E. H. Borst, Newburgh, November 7, 1895, æt. 33; Smith Ely, Newburgh, February 28, 1896, æt. 68; Gustav Gartzmann, Newburgh; W. C. Terry, Ridgbury.

MEDICAL SOCIETY OF THE COUNTY OF ORLEANS.

(Organized January 8, 1878.)

MEETINGS.—Annual, first Thursday in November; semi-annual, first Thursday in May.

Officers. (November, 1895.)

F. B. Storer, *President.* R. W. Bamber, *Vice-President.*
 D. H. Brennan, *Secretary and Treasurer.*
Censors: C. E. Fairman, J. T. James, J. J. Simonds,
 W. F. Eaman, Fred. L. June.

Delegate to State Medical Society: George J. Lund.

Members.

E. R. Armstrong, Holley
 R. W. Bamber, Kendall
 D. H. Brennan, Albion
 M. L. Caverly, Albion
 James Chapman, Medina
 Samuel R. Q. Cochrane, Albion
 J. G. Dolley, Albion
 W. F. Eaman, Gaines
 Charles E. Fairman, Lydonville
 William Fitch, Knowlesville
 Frederic B. Gould, Kent
 Harvey L. James, Shelby
 John T. James, Medina

F. L. June, Waterport
 Tousley B. Lewis, New York
 George J. Lund, Medina
 Edward Munson, Medina
 J. J. Simonds, Barre Centre
 Mrs. E. W. Squier, Albion
 J. F. Stokes, Medina
 F. B. Storer, Holley
 John E. Sutton, Albion
 J. H. Taylor, Holley
 E. M. Tompkins, Knowlesville
 H. C. Tompkins, Knowlesville
 Mrs. Harriet N. Watson, Albion
 Number of Members, 26.

MEDICAL SOCIETY OF THE COUNTY OF OSWEGO.

(Organized in 1821.)

MEETINGS.—Annual, second Tuesday in May; semi-annual, second Tuesday in November, at Oswego.

Officers. (May, 1896.)

J. L. Moer, *President.*
H. P. Marsh, *Secretary.*

F. L. Cooley, *Vice-President.*
Charles G. Bacon, *Treasurer.*

Censors: F. S. Low, J. W. Eddy.

Delegates to State Medical Society: J. K. Stockwell, Geo. W. Johnson.

Members.

W. G. Babcock, Cleveland
C. G. Bacon, Fulton
C. J. Bacon, Camden
N. W. Bates, Central Square
Strong M. Bennett, Mexico
E. H. Boyd, Hannibal
W. J. Bulger, Oswego
J. L. Bulkley, Sandy Creek
H. W. Caldwell, Pulaski
C. C. P. Clark, Oswego
C. M. Coe, Lycoming
F. R. Coe, Sand Bank
F. L. Cooley, Oswego
R. N. Cooley, Hannibal Centre
W. H. Counterman, Cleveland
William B. Coye, Fulton
S. J. Crockett, Sandy Creek
Byron Dewitt, Oswego
R. J. Dimon, Hastings
P. M. Dowd, Oswego
D. D. Drake, Central Square
E. J. Drury, Phoenix
J. W. Eddy, Oswego
F. J. Fillapangh, Sand Bank
Joseph Gardiner, Williamstown
Albert W. Green, Palermo
T. J. Green, Mexico
N. F. Hall, Fulton
John E. Hamill, Phoenix
Vincent G. Hamill, Phoenix
Frank L. Harter, Parish

Cyrus Havens, Hannibal
D. C. Highriter, New Haven
LeRoy F. Hollis, Minetto
James S. Howard, Oswego
J. W. Huntington, Mexico
Mary K. Hutchins, Oswego
George P. Johnson, Mexico
Ira L. Jones, Minetto
J. T. Langan, Oswego
C. M. Lee, Fulton
C. R. Lee, Fulton
F. S. Low, Pulaski
E. F. Marsh, 466 9th st, Brooklyn
H. P. Marsh, Fulton
J. H. Mease, Oswego
J. L. Moer, South Richland
G. W. Nelson, Orwell
J. Pero, West Amboy
H. D. C. Phelps, Oswego
E. Rainier, Oswego
Alfred Rice, Hannibal
S. A. Russell, Fulton
William O. Scott, Parish
C. A. Sheridan, Oswego
J. K. Stockwell, Oswego
J. B. Todd, Parish
William C. Todt, Oswego
Melzar B. Veeder, Central Square
W. M. Wells, Oswego Falls
G. G. Whittaker, Fulton
Hadwen P. Wilcox, Central Square

Number of Members, 62.

Honorary Members: C. H. Butler, Oswego; J. C. Curtis, D.D.S., Fulton; J. V. Kendall, Baldwinsville; T. J. Murdock.

Deceased: A. S. Coe, Oswego; D. D. Becker, Mexico; A. L. Thompson, Sandy Creek.

MEDICAL SOCIETY OF THE COUNTY OF OTSEGO.

MEETINGS—Annual, third Tuesday in July, at Cooperstown; semi-annual, third Tuesday in January.

Officers. (July, 1895.)

J. W. Swanson, *President.*
H. W. Boorn, *Secretary.*

C. E. Parish, *Vice-President.*
J. C. Smith, *Treasurer.*

Delegate to State Medical Society: George F. Entler.

Members.

Geo. A. Armstrong, Burlington Flats	D. R. Kenyon, Oneonta
Wilson T. Bassett, Cooperstown	J. K. Leaning, Cooperstown
B. E. Bishop, Garrattsville	William H. Leonard, Worcester
A. D. Blakely, Milford	W. R. Lough, Edmeston Centre
H. D. Blanchard, Portlandville	J. H. Martin, Otego
Henry W. Boorn, Schenevus	George L. Merritt, Cherry Valley
A. H. Brownell, Oneonta	John M. Moon, Cooperstown
Andrew J. Butler, Unadilla	G. S. Olin, Oneonta
William B. Campbell, Garrattsville	C. E. Parish, Maryland
Meigs Case, Oneonta	Ozias W. Peck, Oneonta
Lorenzo B. Chapman, Oneonta	S. G. Pomeroy, West Oneonta
Charles H. Chesebro, Unadilla Forks	W. R. Seeber, Milford
B. A. Church, Oneonta	George A. Sloan, Westford
H. H. Clapsaddle, Toddsville	Julian C. Smith, Oneonta
David H. Davis, East Worcester	E. W. Spafford, Portlandville
S. M. Day, Burlington Flats	J. W. Sterricker, Roseboom
E. E. Dye, Fly Creek	P. Kerney Strong, Laurens
J. P. Elliott, Oneonta	J. W. Swanson, Springfield Centre
M. K. Engell, South Valley	J. J. Sweet, Unadilla
George F. Entler, Oneonta	G. C. Thayer, Cooperstown
M. L. Ford, Oneonta	Edgar D. Van Cleft, Oneonta
Charles T. Fox, Garrattsville	J. H. Van Rensselaer, Oneonta
John W. Green, West Laurens	William Whiteford, Schenevus
W. H. Hall, Morris	Frank L. Windsor, Laurens
E. E. Houghton, Schenevus	C. F. Wood, Wells Bridge
E. L. Johnson, Hartwick	Milton C. Wright, Mt. Vision

Number of Members, 52.

Honorary Members: Horace Lathrop, Cooperstown; W. A. Thayer, Cooperstown.

Deceased: George Merritt, Cherry Valley, 1895, æt. 66.

MEDICAL SOCIETY OF THE COUNTY OF PUTNAM.

(Organized July 28, 1874.)

MEETINGS.—Annual, fourth Tuesday in April; semi-annual, fourth Tuesday in October.

Officers. (April, 1896.)

A. La Monte, <i>President.</i>	J. E. Card, Jr., <i>Vice-President.</i>
J. E. Reed, <i>Secretary.</i>	A. Ely, <i>Treasurer.</i>
<i>Censors:</i> J. E. Card, Jr.,	J. Reed, N. W. Wheeler.

Delegate to State Medical Society: Austin La Monte.

Members.

J. Edson Card, Jr., Mahopac	George W. Murdock, Cold Spring
Addison Ely, Carmel	J. E. Reed, Carmel
Austin La Monte, Carmel	Nathan W. Wheeler, Patterson
	Number of Members, 6.

Honorary Member: H. Pearce, Pawling, N. Y.

MEDICAL SOCIETY OF THE COUNTY OF QUEENS.

MEETINGS.—Annual, last Tuesday in May; semi-annual, last Tuesday in October.

Officers. (May, 1896.)

R. F. Macfarlane, *President.* John Ordranax, *Vice-President.*
James S. Cooley, *Secretary and Treasurer.*

Censors: J. H. Barry, J. R. Hinkson, J. H. Bogart,
W. H. Zabriskie, Samuel Hendrickson.

Delegates to State Medical Society: Samuel Hendrickson, E. D. Skinner,
C. G. J. Finn.

Members.

H. M. Auger, Jamaica	J. P. Heyen, Northport
R. B. Baisley, East Rockaway	J. R. Hinkson, Long Island City
J. H. Barry, Long Island City	J. E. Hutcheson, Rockville Centre
Austin J. Blanchard, Jamaica	R. W. Hutcheson, Rockville Centre
J. H. Bogart, Roslyn	L. N. Lanehart, Hempstead
P. H. Bumster, Long Island City	Walter Lindsay, Huntington
W. J. Burnett, Long Island City	C. H. Ludlum, Hempstead
John F. Burns, Long Island City	R. F. Macfarlane, Long Island City
M. S. Caldwell, Far Rockaway	John Mann, Jericho
William I. Cocke, Port Washington	P. J. McKeown, Long Island City
A. C. Combes, Newtown	Paul O. Meyer, Long Island City
R. C. F. Combes, Woodhaven	G. K. Meynen, Jamaica
James S. Cooley, Glen Cove	Edward Mueller, College Point
Horace D. Dow, Maspeth	John Ordranax, Roslyn
F. T. de Lano, Rockville Centre	Adolph G. Rave, New Hyde Park
George W. Faller, Oyster Bay	R. F. B. Seaman, Locust Valley
C. G. J. Finn, Hempstead	R. S. Seaman, Bay Side
Neil O. Fitch, Astoria	E. D. Skinner, Mineola
Walter G. Frey, Long Island City	S. B. Smallwood, Astoria
Peter Y. Frye, Oyster Bay	Benj. G. Strong, Long Island City
G. A. Finsterer, Floral Park	C. T. Taliaferro, Hicksville
William B. Gibson, Huntington	J. D. Trask, Astoria
E. A. Goodridge, Flushing	John F. Valentine, Brooklyn
Charles J. Hall, Glen Cove	Anselm A. Voegtli, Long Island City
G. H. Hammond, Freeport	D. B. Whitney, East Norwich
A. S. Heath, Brooklyn	Philip M. Wood, Jamaica
Samuel Hendrickson, Jamaica	W. D. Wood, Jamaica
Skidmore Hendrickson, Brooklyn	Frederick A. Wright, Glen Cove
M. W. Herriman, Long Island City	William H. Zabriskie, Glen Cove

Number of Members, 56.

Honorary Members.

Frank Baldwin, Brooklyn
Walter B. Chase, Brooklyn

Reuben Jeffrey, Brooklyn
Lewis A. Sayre, New York City

MEDICAL SOCIETY OF THE COUNTY OF RENSSELAER.

(Organized 1806.)

MEETINGS.—Annual, second Tuesday in May; stated, second Tuesday in each month, except in July and August.

Officers. (May, 1896.)

O. F. Kinloch, *President.* F. T. McIntosh, *Vice-President.*
Archibald Buchanan, *Secretary.* J. W. Morris, *Treasurer.*

Censors: Leroy McLean, S. H. Webster, M. A. Wheeler.

Delegates to State Medical Society: G. A. Bradbury, M. D. Dickinson, D. W. Houston.

Members.

(Where no town is mentioned Troy is to be understood.)

W. Akin, 12 4th st	D. W. Houston, 2d st
A. Allen, Grafton Centre	J. C. Hutchinson, 33 4th st
C. S. Allen, Greenbush	M. Keenan, 2301 Sixth av
W. L. Allen, Greenbush	O. N. Kinloch, 16 4th st
Joseph E. Baynes, 2149 Fifth av	J. D. Lomax, Marshall Infirmary
J. H. Bissell, 2187 Fifth av	E. L. Lyons, 298 Fourth av
R. B. Bontecou, 82 4th st	F. T. McIntosh, 2654 Fifth av
R. Brismade Bontecou, 82 4th st	J. P. Marsh, 1739 Fifth av
B. S. Booth, 21 1st st	W. P. Mason, Prof. Chem. R. P. I.
G. A. Bradbury, Lansingburgh	E. L. Meredith, Waverly place
E. A. Brown, 5th and State sts	J. McChesney, Pawling av
Archibald Buchanan, 128 3d st	Leroy McLean, 21 1st st
Donald G. Buchanan, 52 Grand st	E. W. Morehouse, 99 2d st
H. B. Burton, 75 4th st	J. W. Morris, 1823 Third av
E. W. Capron, Lansingburgh	C. E. Nicholas, 25 1st st
J. H. Cipperly, 121 2d st	J. O'Connor, Troy Hospital
W. Cooper, 81 3d st	M. F. Phalen, 328 Congress st
A. C. Crouse, Melrose	Z. Rousseau, Ferry and Second sts
H. Defreest, Troy	T. B. St. John, Centre Brunswick
M. D. Dickinson, 6 St. Paul's place	W. W. Seymour, 105 3d st
T. G. Dickson, 2425 Fifth av	S. A. Skinner, Hoosick Falls
M. Felter, 1626 Fifth av	F. Smith, 3 Clinton place
William Finder, Jr., 2 Union place	C. H. Travell, 14 4th st
H. C. Gordinier, 89 4th st	L. G. Tuttle,
C. E. Greenman, 515 1st st	B. J. Ward, 1 Cyprus st
J. B. Harvie, 1741 Fifth av	R. H. Ward, 53 4th st
T. B. Heimstreet, 14 Division st	S. H. Webster, 811 River st
C. B. Herrick, 1824 Fifth av	M. A. Wheeler, Albia
W. L. Hogeboom, 2183 Fifth av	Isaac N. Wright, Averill Park

Number of Members, 58.

MEDICAL SOCIETY OF THE COUNTY OF RICHMOND.

(Organized July 10, 1806 ; reorganized January 17, 1855.)

MEETINGS.—Annual, first Wednesday in January ; stated, first Wednesday in every month, at 3.30 P.M., at the S. R. Smith Infirmary, New Brighton.

Officers. (January, 1896.)

Theodore Walser, *President.* E. D. Coonley, *Vice-President.*
H. C. Johnston, *Secretary and Treasurer.*

Censors: J. J. O'Dea, Wm. Bryan, T. J. Thompson.

Delegate to State Medical Society: C. W. Townsend.

Members.

F. T. Barber, Port Richmond	P. E. Martindale, Port Richmond
H. Beyer, Stapleton	F. Mechtold, Stapleton
W. F. Bourne, Tompkinsville	Isaac L. Millsbaugh, Richmond
William Bryan, W. New Brighton	George Mord, Clifton
F. E. Clarke, W. New Brighton	Jeff Scales, New Brighton
J. G. Clarke, W. New Brighton	J. F. Sprague, Clifton
E. D. Coonley, Mariners' Harbor	T. J. Thompson, Clifton
A. D. Decker, Princess Bay	C. W. Townsend, New Brighton
F. De Revere, Stapleton	J. J. Van Rensselaer, New Brighton
A. Doty, Clifton	J. E. Vidal, Stapleton
R. Henry Golder, Rossville	Theodore Walser, New Brighton
G. C. Hubbard, Tottenville	W. C. Walser, W. New Brighton
G. P. Jessup, New Dorp	Walker Washington, Tottenville
H. C. Johnston, New Brighton	S. E. Whitman, Port Richmond
H. D. Joy, Snug Harbor	W. B. Wilkinson, New Brighton
J. J. O'Dea, Stapleton	J. W. Wood, Port Richmond

Number of Members, 32.

Deceased: G. L. Humphreys, Mariners' Harbor, 1895.

MEDICAL SOCIETY OF THE COUNTY OF ROCKLAND.

(Reorganised May 18, 1880.)

MEETINGS.—Annual, last Tuesday in May; semi-annual, last Tuesday in October.

Officers.

E. B. Laird, *President*.
 _____ *Secretary*.

E. H. Maynard, *Vice-President*.
 I. C. Haring, *Librarian*.

Censors: A. O. Bogart, G. A. Blauvelt, J. O. Polhemus.

Delegate to State Medical Society: _____.

Members.

Garrett A. Blauvelt, Nyack
 Albert O. Bogert, Pearl River
 S. Demorest, Suffern
 Isaac C. Haring, West Nyack
 H. H. House, Rockland Lake
 Eugene B. Laird, Haverstraw

Frank L. Laverseur, Haverstraw
 C. H. Masten, Sparkill
 E. H. Maynard, Nyack
 J. O. Polhemus, Nyack
 James J. Stephens, Tappantown
 Number of Members, 11.

MEDICAL SOCIETY OF THE COUNTY OF ST. LAWRENCE.

(Reorganized 1861.)

MEETINGS.—Annual, third Tuesday in May; semi-annual, third Tuesday in October.

Officers. (May, 1896.)

J. H. Brownlow, *President*.
 S. W. Close, *Secretary*.

J. C. Willson, *Vice-President*.
 J. S. Raymond, *Treasurer*.

Censors: Jesse Reynolds, B. F. Sherman, E. H. Bridges.

Delegates to State Medical Society: P. M. Wise, J. H. Brownlow.

Members.

Andrew H. Allen, Gouverneur	Lucia E. Heaton, Canton
F. D. Allen, Richville	T. R. Hossie, Gouverneur
F. A. Anderson, Massena	R. H. Hutchings, Ogdensburg
W. L. Babcock, Ogdensburg	W. H. Kidder, Ogdensburg
C. W. Bayley, Rensselaer Falls	Grant C. Madill, Ogdensburg
C. C. Bartholomew, Ogdensburg	H. A. McIlmoyl, Ogdensburg
John N. Bassett, Jr., Canton	Peter Monakey, Gouverneur
E. H. Bridges, Ogdensburg	H. J. Morgan, Ogdensburg
J. H. Brownlow, Ogdensburg	Robert Morris, Ogdensburg
S. W. Close, Gouverneur	Martin S. Parker, Parishville
W. S. Daly, Ogdensburg	T. A. Pease, Norwood
S. W. Dodge, Massena	J. S. Raymond, Ogdensburg
George H. Dowsey, Brasher Falls	G. W. Reynolds, Madrid
A. C. Drury, Canton	Jessie Reynolds, Potsdam
Benjamin F. Drury, Gouverneur	W. H. Reynolds, Potsdam
Fred. F. Drury, Gouverneur	B. F. Sherman, Ogdensburg
Franklin D. Earl, Morristown	John C. Sherman, Ogdensburg
J. Q. Flood, Hopkinton	Moses E. Smith, Colton
Ira J. Fuller, Spragueville	E. M. Somers, Jr., Ogdensburg
James Garvin, Morristown	H. S. Stilwell, Ogdensburg
E. H. Hackett, North Lawrence	S. D. Willgus, Ogdensburg
H. T. Hammond, Chase's Mills	J. C. Willson, Canton
W. H. Hanbridge, Ogdensburg	P. M. Wise, Ogdensburg

Number of Members, 46.

Deceased: James S. Gale, Canton, 1895, æt. 60; A. B. Goodenough, Edwards, 1895, æt. 65.

MEDICAL SOCIETY OF THE COUNTY OF SARATOGA.

(Organized in July, 1807.)

MEETINGS.—Annual, first Tuesday in June; semi-annual, first Tuesday in December.

Members.

N. H. Ballou, Lansingburgh	A. C. Kniskern, Crescent
F. M. Boyce, Saratoga Springs	M. Lewis, Ballston Spa
C. D. Bull, Stillwater	John Moore, Bacon Hill
A. D. Burger, Mechanicville	B. J. Murray, Saratoga Springs
G. F. Comstock, Saratoga Springs	T. E. Parkham, Rock City Falls
H. C. Cooper, Clifton Park	J. R. Preston, Schuylerville
C. Ensign, Mechanicville	L. B. Putnam, Saratoga Springs
Frank Gow, Schuylerville	T. B. Reynolds, Saratoga Springs
C. S. Grant, Saratoga Springs	S. N. Rowell, Saratoga Springs
W. H. Hall, Saratoga Springs	F. A. Sherman, Ballston Spa
W. H. Hodgman, Saratoga Springs	H. Vanderburgh, Ballston Spa
E. G. Inlay, Saratoga Springs	F. A. Young, West Charlton
I. G. Johnson, Greenfield Centre	

Number of Members, 26.

MEDICAL SOCIETY OF THE COUNTY OF SCHENECTADY.

(Organized January 16, 1869.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in June.

Officers. (January, 1896.)

D. L. Kathan, *President.* F. V. Brownell, *Vice-President.*
 C. G. Briggs, *Secretary.* H. C. Van Zandt, *Treasurer.*

Censors: C. F. Clowe, W. L. Pearson, J. A. Heatley.

Delegate to State Medical Society: H. V. Mynderse.

Members.

D. J. Barry, Schenectady	J. F. McEncroe, Schenectady
C. G. Briggs, Schenectady	John Mackay, Schenectady
F. V. Brownell, Schenectady	Jeanette Murray, Schenectady
Peter Brumagham, Mariaville	H. V. Mynderse, Schenectady
B. W. Burland, Schenectady	William Parsons, Fultonville
N. C. Cheesman, Scotia	William L. Pearson, Schenectady
C. F. Clowe, Schenectady	Maurice Perkins, Schenectady
W. T. Clute, Schenectady	M. G. Plank, Schenectady
C. C. Duryea, Schenectady	Joseph Raymond, Schenectady
A. Ennis, Pattersonville	James J. Reagles, Schenectady
P. R. Furbeck, Gloversville	J. L. Schoolcraft, Schenectady
W. W. Goddard, Schenectady	G. L. Van Allen, Schenectady
Charles Hammer, Schenectady	E. P. Van Epps, Schenectady
J. A. Heatley, Schenectady	H. C. Van Zandt, Schenectady
D. L. Kathan, Schenectady	A. T. Vedder, Schenectady
Henry A. Kurth, Schenectady	L. T. Vedder, Schenectady
George E. McDonald, Schenectady	Edwin Young, West Glenville
	Number of Members, 34.

MEDICAL SOCIETY OF THE COUNTY OF SCHOHARIE.

(Organized in 1806; reorganized in 1857.)

MEETINGS.—Annual, third Tuesday in May; semi-annual, second Tuesday in October.

Officers. (May, 1896.)

C. K. Frazier, *President.* H. L. Odell, *Vice-President.*
 H. F. Kingsley, *Secretary.* L. Cross, *Treasurer.*

Censors: Lemuel Cross, C. K. Frazier, F. P. Beard,
 C. S. Best, J. R. Brown.

Committee on Hygiene: W. S. Rivenburgh, W. W. Burgett.

Delegate to the State Medical Society: A. L. Haines.

Members.

F. P. Beard, Cobleskill	C. Dickinson, Seward
LeRoy Becker, Cobleskill	J. A. Dockstader, Sharon Springs
C. S. Best, Middleburgh	C. K. Frazier, Cobleskill
E. E. Billings, Gilboa	William Hagadorn, Gilboa
J. R. Brown, Seward	Abram L. Haines, Schoharie
E. E. Brayman, Livingstonville	John Hotaling, Gallupville
E. O. Bruce, Hyndsville	George Jackson, Hunter's Land
W. W. Burgett, Fultonham	E. L. Johnson, Central Bridge
C. S. Burnett, Summit	H. F. Kingsley, Schoharie
L. Cross, Cobleskill	Ezra Lawyer, Cobleskill

Sherwood LeFevre, Richmondville
D. M. Leonard, Broome Centre
Edward Marsh, Sloansville
J. J. Miller, Cobleskill
D. Norwood, Esperance
H. L. Odell, Sharon Springs
E. S. Persons, Gilboa
W. S. Rivenburgh, Middleburgh
R. J. Roscoe, Cobleskill

J. Rossman, Middleburgh
Edgar S. Simpkins, Middleburgh
Nathan Smith, Richmondville
O. A. Snyder, Schoharie
James W. Tibbits, Eminence
J. H. Vrooman, W. Blenheim
Joel A. Webb, Howe's Cave
John H. Weckel, Breakabeen
Henry D. Wells, Middleburgh

Number of Members, 88.

Deceased: W. S. Layman, Schoharie, September 3, 1895, æt. 63; R. Grant Havens, Jefferson; H. Sperbeck, Richmondville.

MEDICAL SOCIETY OF THE COUNTY OF SCHUYLER.

(Organized December 29, 1857.)

MEETINGS.—Annual, second Tuesday in January; semi-annual, second Tuesday in July.

Officers. (January, 1896.)

W. H. Heist, *President.* J. Franklin Barnes, *Vice-President.*
George M. Post, *Secretary and Treasurer.*

Censors: S. B. Allen, E. H. Davis, W. H. Heist,
G. M. Post, George P. Laylor.

Delegate to the State Medical Society: S. B. Allen.

Members.

S. B. Allen, Burdette
J. F. Barnes, Watkins
William H. Beach, Catharine
A. L. Beahan, Canandaigua
R. Bell, Monterey
M. L. Bennett, Watkins
D. W. Birge, Hector
John Boyce, Weston
E. H. Davis, Elmira
M. D. Hawes, North Hector

W. H. Heist, Townsend
George P. Laylor, Havana
George M. Post, Havana
D. W. Scutt, Watkins
O. B. Sherwood, Cayutaville
B. T. Smelzer, Albany
G. O. Smith, Odessa
H. P. Stillwell, Burdette
J. A. Westlake, Washington, D. C.
L. T. White, Enfield, Tompkins Co.
Number of Members, 20.

THE MEDICAL SOCIETY OF THE COUNTY OF SENECA.

MEETING.—Annual, second Tuesday in May.

Officers.

Henry P. Frost, *President.* Harvey E. Brown, *Vice-President.*
D. F. Evarts, *Secretary.* Frank G. Seaman, *Treasurer.*

Censors: Elias Lister, George A. Bellows, E. W. Bogardus,
John Denniston, L. A. Gould.

Delegates to Societies: Henry P. Frost, New York State Medical Society; James Haslett, American Medical Association; George W. Clark, New York State Medical Association.

Members.

A. J. Alleman, McDougall's
 T. E. Bamford, Willard
 George A. Bellows, Waterloo
 E. R. Bishop, Willard
 M. D. Blaine, Geneva
 E. W. Bogardus, Seneca Falls
 G. B. Bristol, Ovid
 Harvey E. Brown, Fayette
 J. F. Carlton, Fayette
 J. F. Carman, Lodi
 George W. Clark, Waterloo
 J. F. Crosby, Seneca Falls
 John Denniston, Ovid
 Richard Dey, Romulus
 D. F. Evarts, Romulus
 John Flickinger, Trumansburg
 Henry P. Frost, Willard
 Frederick Gester, Seneca Falls

Louis A. Gould, Farmer
 James Haslett, Waterloo
 H. G. Hopkins, Willard
 Elias Lester, Seneca Falls
 P. J. McNamara, Seneca Falls
 S. F. Mellen, Willard
 W. S. Nelson, Seneca Falls
 Charles B. Osborne, Waterloo
 Charles W. Pilgrim, Willard
 George Post, Ovid
 John Russell, Canoga
 Herbert E. Schoonmaker, Rochester
 Frank G. Seman, Seneca Falls
 William Slacey, Magee's Corners
 J. H. Sternberg, Waterloo
 J. M. Townsend, Townsendville
 S. R. Welles, Waterloo
 Number of Members, 35.

MEDICAL SOCIETY OF THE COUNTY OF STEUBEN.

MEETINGS.—Annual, second Tuesday in May; semi-annual, last Tuesday in October.

Officers. (1896.)

Willis S. Cobb, *President.* P. L. Alden, *Vice-President.*
 W. W. Smith, *Secretary and Treasurer.*
Censors: C. S. Parkhill, Ira P. Smith, Eli Allison,
 M. T. Babcock, T. H. Pawling.
Delegates to State Medical Society: C. M. Brasted, H. M. Bourne.

Members.

Cassius M. Ackley, South Dansville
 H. R. Ainsworth, Addison
 P. L. Alden, Hammondsport
 A. A. Aldrich, Addison
 Eli Allison, Wayne
 M. T. Babcock, Hammondsport
 J. A. Bennett, Prattsburgh
 H. M. Bourne, Corning
 C. M. Brasted, Hornellsville
 T. O. Burlison, Bath
 Franklin Burr, Corning
 George Cauderman, Hornellsville
 Willis S. Cobb, Corning
 D. F. Cridler, Hornellsville
 A. H. Cruttenden, Bath
 Lewis Fitzsimmons, South Pultney
 T. B. Fowler, Cohocton
 A. L. Gilbert, North Cohocton
 H. Gilbert, Hornellsville
 H. S. Gillett, Savona
 W. T. Green, Hornellsville
 W. W. Green, Prattsburgh
 Joseph Hoare, Corning
 G. C. Hubbard, Hornellsville
 John S. Hubbs, Hammondsport
 M. B. Hubbs, Addison
 C. O. Jackson, Cameron
 J. R. Kelly, Hornellsville
 Frank H. Koyle, Hornellsville
 George W. Lane, Corning
 H. G. Mace, Wallace
 Thomas F. McNamara, Corning
 J. H. McNett, Hornellsville
 J. D. Mitchell, Hornellsville
 H. B. Nichols, Pultney
 S. B. H. Nichols, Corning
 W. E. Palmer, Hornellsville
 C. S. Parkhill, Hornellsville
 Myron H. Parkhill, Howard
 R. F. Parkhill, Howard
 C. Patterson, Avoca
 Thomas H. Pawling, Bath

Charles R. Phillips, Hornellsville
 A. D. Robbins, Corning
 C. B. Robertson, Towlesville
 Denton W. Rodgers, Hornellsville
 Robert J. Scott, Prattsburgh
 I. P. Smith, Bath
 W. W. Smith, Avoca
 B. M. Spencer, Hornellsville
 C. P. Stevens, Wallace
 Chester T. Stewart, 165 Genesee st,
 Buffalo, N. Y.

P. K. Stoddard, Prattsburgh
 Stephen M. Switzer, Bradford
 C. J. Tomer, Savona
 J. H. Trumbull, Hornellsville
 Bertis R. Wakeman, Hornellsville
 Eugene E. Webster, Hornellsville
 Seymour C. Williamson, Canisteo
 E. Winnie, Haskinville
 F. A. Wygant, Cohocton
 Number of Members, 61.

Deceased : Arthur Kendall, Corning ; M. M. Perry, Troupsburgh.

MEDICAL SOCIETY OF THE COUNTY OF SUFFOLK.

(Organized July 22, 1806.)

MEETINGS.—Annual, in April, at Riverhead, during court week ; semi-annual, in October, on the day and at the place directed at the April meeting.

Officers. (April, 1896.)

J. Richard Taylor, <i>President.</i>	J. H. Benjamin, <i>Vice-President.</i>
H. H. Young, <i>Secretary.</i>	B. D. Skinner, <i>Treasurer.</i>
J. H. Benjamin, <i>Librarian.</i>	

Censors : J. H. Benjamin, S. Blume, A. Raynor.

Delegate to State Medical Society : Samuel Blume.

Members.

Clarence A. Baker, Yaphank
 Lester C. Baldwin, Southold
 J. F. Bell, East Hampton
 F. Everett Benjamin, Shelter Island
 John H. Benjamin, Riverhead
 W. S. Bennett, Patchogue
 Samuel Blume, Riverhead
 M. L. Chalmers, Port Jefferson
 Silas R. Corwith, Bridgehampton
 Robert G. Cornwall, Jamesport
 L. B. Edwards, Patchogue
 George T. Fanning, Stony Brook
 Hugh Halsey, Southampton
 James L. Halsey, Islip
 Ed. H. Hamill, Newark
 W. W. Hewlett, Babylon
 Charles H. Hildreth, Southampton
 Clarence H. Hulse, Sayville
 William A. Hulse, Bay Shore

C. D. Jones, Amityville
 A. B. Leggett, Babylon
 Charles A. Luce, Amityville
 J. H. Maguire, Salem, Wash. Co.
 Clarence C. Miles, Greenport
 John Nugent, Southampton
 Frank Overton, Patchogue
 Edward F. Preston, Amityville
 William S. Preston, Patchogue
 Addison Raynor, Riverhead
 B. F. Rogers, Eastport
 Melville S. Skidmore, East Moriches
 Barton D. Skinner, Greenport
 J. R. Taylor, Sag Harbor
 Arthur H. Terry, Patchogue
 H. P. Terry, Riverhead
 Charles E. Wells, Sag Harbor
 H. H. Young, Riverhead
 Number of Members, 37.

MEDICAL SOCIETY OF THE COUNTY OF SULLIVAN.

(Organized October 8, 1809.)

MEETINGS.—Annual, first Wednesday after the second Tuesday in June ; semi-annual, whenever the Society direct at the annual meeting.

Officers. (June, 1896.)

Charles E. Piper, *President.* W. W. Murphy, *Vice-President.*
 Charles S. Payne, *Secretary.* W. G. Steele, *Treasurer.*

Censors: F. A. McWilliams, C. E. Piper, G. F. Rice.

Delegate to State Medical Society: W. W. Appley.

Members.

W. W. Appley, Cohocton	W. W. Murphy, Liberty
George M. Beakes, Bloomingburgh	Ridley C. Paine, Bethel
T. W. Bennett, Jeffersonville	Charles S. Payne, Liberty
J. A. Cauthers, Monticello	G. F. Perry, Woodbourne
E. Crocker, Narrowsburg	Charles E. Piper, Wurtsboro
J. F. Curlette, Mountaintale	G. F. Rice, Jeffersonville
W. H. DeKay, Hurleyville	W. F. Sherwood, Liberty
N. B. Johnson, Barryville	W. G. Steele, Mongaup Valley
S. A. Kemp, Callicoon	R. C. Tuttle, Rockland
G. H. Lathrop, Livingston Manor	W. S. Webster, Liberty
F. A. McWilliams, Monticello	J. L. Whitcomb, Liberty

Number of Members, 22.

MEDICAL SOCIETY OF THE COUNTY OF TIOGA.

MEETINGS.—Annual, second Tuesday in January; first quarterly, second Tuesday in April; semi-annual, second Tuesday in July; second quarterly, second Tuesday in October.

Officers. (January, 1896.)

C. R. Rodgers, *President.* W. L. Ayer, *Vice-President.*
 R. D. Eastman, *Secretary.* J. M. Barrett, *Treasurer.*

Censors: George M. Cady, H. L. Knapp, D. S. Anderson.

Delegate to State Medical Society: D. S. Anderson.

Members.

James Allen, Richford	C. R. Heaton, Owego
D. S. Anderson, Owego	C. E. Hollenbeck, Halsey Valley
W. L. Ayer, Owego	W. E. Johnson, Waverly
James M. Barrett, Owego	Hiram L. Knapp, Newark Valley
G. W. Beach, Apalachin	J. E. Leonard, Harford Mills
Edward S. Beck, Owego	G. B. Lewis, Owego
W. J. Burr, Newark Valley	I. W. Lewis, Apalachin
George M. Cady, Nichols	A. T. Pearsall, Owego
C. W. Chidester, Weltonville	E. E. Pease, Nichols
J. E. Dixon, Candor	A. W. Post, Tioga Centre
R. D. Eastman, Berkshire	C. R. Rodgers, Newark Valley
Walter C. Everett, Nichols	C. L. Stiles, Owego
W. H. Fisher, Spencer	J. H. Tanner, Spencer
Henry A. Glover, Windham, Pa.	J. T. Tucker, Waverly
Charles F. Griswold, Barton	C. P. Vosburg, Halsey Valley
D. D. Harnden, Waverly	I. S. Vreeland, Waverly
R. S. Harnden, Waverly	Thomas Washburn, Spencer
A. J. Harris, Candor	

Number of Members, 35.

MEDICAL SOCIETY OF THE COUNTY OF TOMPKINS.

(Organized about 1815; reorganized October, 1862.)

MEETINGS.—Annual, last Wednesday in May; semi-annual, last Wednesday in November.

Officers. (1896.)

John Winslow, *President.* Edward Meany, *Vice-President.*
 W. H. Lockerby, *Secretary.* S. H. Peck, *Treasurer and Librarian.*

Censors: S. H. Peck, W. C. Gallagher, John Winslow,
 Eugene Baker, Edward Meany.

Committee on Hygiene: B. G. Wilder, James Law.

Delegate to State Medical Society: Edward Meany.

Members.

Eugene Baker, Ithaca	E. O. Kyle, Ithaca
Judson Beach, Etna	W. H. Lockerby, Ithaca
Chauncey P. Biggs, Ithaca	Edward Meany, Ithaca
W. B. Brader, Ithaca	E. R. Osterhout, Newfield
C. C. Cook, Newfield	S. H. Peck, Ithaca
James P. Fahey, Ithaca	Burt G. Wilder, Ithaca
W. C. Gallagher, Slaterville	John Winslow, Ithaca
F. A. Kerst, Trumansburg	Number of Members, 16.

Honorary Members.

Prof. S. H. Gage, Ithaca Prof. James Law, Ithaca Mrs. Gage

MEDICAL SOCIETY OF THE COUNTY OF ULSTER.

MEETINGS.—Annual, last Tuesday in May, at Kingston; quarterly, second Tuesday in September, December, and March, at such places as the Committee Minora may direct.

Officers. (May, 1896.)

A. A. Stern, *President.* I. J. Wolf, *Vice-President.*
 E. E. Norwood, *Secretary.* Jacob Chambers, *Treasurer.*

Censors: A. H. Palmer, E. H. Loughran, A. H. Mambert,
 C. W. Crispell, P. Hayden.

Committee on Hygiene: J. Chambers, R. Crawford,
 C. W. Crispell, B. B. Bloom, C. A. Munn.

Delegates to State Medical Society: J. Chambers, A. A. Stern.

Members.

Benjamin R. Bevier, Napanock	C. W. Crispell, Rondout
B. B. Bloom, Shokan	S. L. Dawes, Saugerties
J. M. Bowman, Eddyville	Thomas S. Dawes, Saugerties
Charles S. Brower, Phœnicia	John A. Decker, Ulster Park
E. W. Carhart, Milton	C. De La Montayne, Port Ewen
Jacob Chambers, Kingston	W. F. Drake, West Hurley
H. Craft, Stone Ridge	J. F. S. Eastgate, Ellenville
Rufus Crawford, West Camp	J. Freston, Milton

E. J. Gallagher, Kingston
 W. W. Hadley, Stone Ridge
 C. V. Hasbrouck, Rosendale
 J. Hasbrouck, Port Ewen
 W. D. Hasbrouck, Rondout
 Patrick Hayden, Rosendale
 P. D. B. Hoornbeck, Wawarsing
 J. E. D. Hoornbeck, Kerhonkson
 Augustus Huhne, Rondout
 T. O. Keator, Accord
 George S. La Moree, Highland
 E. H. Loughran, Kingston
 R. Loughran, Kingston
 A. H. Mambert, Rondout
 C. T. Montgomery, Glasco

Charles A. Munn, Kingston
 R. M. Murphy, Rondout
 E. E. Norwood, Kingston
 B. A. O'Bryan, Woodstock
 A. H. Palmer, Marlborough
 A. Reed, Highland
 S. Schoonmaker, Kingston
 A. A. Stern, Rondout
 G. H. Van Gaasbeck, Shokan
 H. Van Hoevenburgh, Kingston
 Alfred S. Vrooman, High Falls
 J. S. Wade, West Hurley
 J. Wolf, Rondout
 J. D. Wurtz, Kingston
 J. McF. Winfield, Brooklyn
 Number of Members, 49.

Honorary Members.

A. T. Douglass, New London, Conn. Robert Newman, New York City
 William Hailes, Albany George F. Shrady, New York City

Deceased: E. D. Chipman, Saugerties, May 24, 1895, æt. 60.

MEDICAL SOCIETY OF THE COUNTY OF WARREN.

MEETINGS.—Annual, second Tuesday in June, at Lake George; semi-annual, when and where the Society determines.

Officers. (June, 1896.)

G. R. Martine, *President.* D. J. Fitz Gerald, *Vice-President.*
 G. H. McMurray, *Secretary.* Elias Bibby, *Treasurer.*
Censors: A. H. Phelps, D. M. Hall, D. B. Howard.

Delegate to State Medical Society: ————

Members.

F. A. Aldrich, Chestertown E. W. Howard, Warrensburgh
 G. H. Aldrich, Stony Creek W. J. Hunt, Glens Falls
 William D. Aldrich, Warrensburgh C. J. Loggins, Weaverton
 W. W. Aldrich, Weaverton A. Mallory, Chestertown
 Elias Bibby, Glens Falls G. H. McMurray, Glens Falls
 L. Charette, Warrensburgh G. R. Martine, Glens Falls
 R. J. Eddy, Glens Falls A. H. Phelps, Glens Falls
 D. J. Fitz Gerald, Glens Falls F. H. Stevens, Lake George
 D. M. Hall, Glens Falls Buel G. Streeter, Glens Falls
 D. B. Howard, Warrensburgh Fred. B. Streeter, Glens Falls
 Number of Members, 20.

MEDICAL SOCIETY OF THE COUNTY OF WASHINGTON.

(Organized July 1, 1806.)

MEETINGS.—Annual, third Tuesday in May, at Argyle; semi-annual, first Tuesday in October.

Officers. (May, 1896.)

W. B. Melick, *President.* J. H. Maguire, *Vice-President.*
 Henry Root, *Secretary and Treasurer.*

Censors: G. H. Whitcomb, S. J. Banker, C. E. Lambert,

Committee on Hygiene: W. B. Madison, George M. Stillman,
John Jones.

Delegate to State Medical Society: W. B. Melick.

Members.

O. C. Baker, Brandon, Vt.
S. J. Banker, Fort Edward
Franklin T. Beattie, Shushan
F. H. Braymer, W. Pawlet, Vt.
Frank H. Carpenter, West Rupert
J. Cipperly, Middle Falls
James S. Cooley, Glen Cove
C. J. Farley, Saranac Lake
Fred. G. Fielding, Glens Falls
S. J. Finch, Fort Ann
T. Z. Gibbs, Fort Ann
H. Gray, Greenwich
John S. Guinan, Whitehall
P. Z. Hebert, London
A. Hewitt, Saratoga Springs
B. R. Holcomb, Whitehall
S. B. Irwin, West Hebron
John Jones, Middle Granville
Edward Joslin, Whitehall
Charles W. Keefer, Mechanicville
B. F. Ketchum, Brattleboro, Vt.

J. Knowlson, Poultney, Vt.
Charles E. Lambert, Salem
J. Lambert, Salem
W. B. Madison, West Hebron
J. H. Maguire, Salem
William B. Melick, Fort Edward
J. Millington, East Greenwich
I. T. Munroe, Granville
G. B. Murray, Greenwich
James T. Park, Sandy Hill
W. H. Renois, East St. Louis, Ill.
Henry Root, Whitehall
B. C. Senton, Rutland, Vt.
J. C. Sill, Argyle
George M. Stillman, Argyle
W. A. Tenney, Granville
T. C. Wallace, Cambridge
G. H. Whitcomb, Greenwich
Ross Wilson, Chicago
A. M. Young, Salem
Number of Members, 41.

Deceased: A. J. Long, Whitehall, August 10, 1895, æt. 71.

MEDICAL SOCIETY OF THE COUNTY OF WAYNE.

(Organized July 2, 1828.)

MEETINGS.—Annual, second Tuesday in July, at Lyons; semi-annual, third Tuesday in January, at Newark.

Officers. (July, 1895.)

T. H. Hallett, *President*.
A. A. Young, *Secretary*.

J. W. Atwood, *Vice-President*.
Darwin Colvin, *Treasurer*.

Censors: J. N. Arnold, M. A. Veeder, W. J. Hennessy,
N. E. Landon.

Delegate to State Medical Society: M. A. Veeder.

Members.

J. N. Arnold, Clyde
J. W. Atwood, Marion
G. D. Barrett, Clyde
Frank Barton, Clyde
Mary A. Brownell, Newark
H. N. Burr, Walworth
M. E. Carmer, Lyons
Robert S. Carr, Williamson
H. L. Chase, Palmyra

Darwin Colvin, Clyde
E. H. Draper, Wolcott
T. H. Hallett, Clyde
W. J. Hennessy, Palmyra
D. B. Horton, Red Creek
N. E. Landon, Newark
Frank Myers, Sodus
M. W. T. Negus, South Sodus
W. F. Nutton, Newark

James W. Putnam, Lyons
H. N. Roberts, Newark
H. F. Seaman, Alton
A. F. Sheldon, Lyons
J. E. Smith, Clyde
L. H. Smith, Palmyra
J. L. Sprague, Williamson
L. S. Sprague, Williamson

C. H. Towlerton, Lyons
Jennie M. Turner, Lyons
M. A. Veeder, Lyons
E. E. Williams, Clyde
F. L. Wilson, Sodus Point
George D. York, Huron
A. A. Young, Newark
Number of Members, 83.

MEDICAL SOCIETY OF THE COUNTY OF WESTCHESTER.

(Organized May 8, 1797.)

MEETINGS.—Annual, third Tuesday in May, at White Plains; intermediate, third Tuesday in September, November, and March.

Officers. (May, 1896.)

A. M. Campbell, *President*. H. F. Hart, *Vice-President*.
Evarts M. Morrell, *Secretary*. Robert T. Howe, *Treasurer*.
Newton F. Curtis, *Curator*.

Censors: H. E. Schmid, W. H. Helm, Newton F. Curtis.

Committee on Hygiene:

A. M. Campbell, William F. Greene, Philander Collard.

Delegates to State Medical Society:

H. F. Hart, H. E. Schmid, Evarts M. Morrell.

Members.

Frank A. Augur, Armonk
G. B. Balch, Yonkers
Garrett N. Banker, Yonkers
A. T. Banning, Mt. Vernon
Elizabeth H. Bates, Port Chester
M. W. Barnum, Sing Sing
W. A. Bell, Yonkers
A. C. Benedict, Yonkers
Charles S. Benedict, 339 W. 19th st,
New York City
Samuel K. Bemner, Mt. Vernon
James C. Bennett, Yonkers
Samuel Beyea, New Rochelle
E. M. Brandt, Hastings-on-Hudson
H. Beattie Brown, Yonkers
Valentine Browne, Yonkers
E. F. Brush, Mt. Vernon
W. E. Bullard, Larchmont
Clarence W. Buckmaster, Yonkers
C. P. Byington, Croton Landing
J. H. Carver, Yonkers
P. A. Callan, Yonkers
W. M. Carhart, Peekskill
A. M. Campbell, Mt. Vernon
Stuart B. Carlisle, Mt. Vernon

Elon N. Carpenter, Mamaroneck
W. J. Carpenter, Katonah
Thomas R. Carter, Mt. Vernon
D. L. Casselman, Purdy's Station
Charles F. Chapman, Mt. Kisco
J. F. Chapman, Katonah
G. C. S. Choate, Pleasantville
J. H. Churchill, Pawling
George B. Clark, Mamaroneck
E. M. Clark, Mamaroneck
Philander Collard, Sing Sing
E. E. Colton, Yonkers
J. E. Comfort, Morrisania
David T. Corde, Mt. Vernon
N. S. Coons, Yonkers
R. B. Coutant, Tarrytown
A. H. Crump, Jerome
James H. Curry, Shrub Oak
Andrew F. Currier, Mt. Vernon
Newton F. Curtis, White Plains
F. W. Dalrymple, New Rochelle
H. G. V. DeHart, White Plains
W. C. Deming, Westchester
William E. Diller, New York City
Robert A. Dinegar, Mt. Vernon

Joseph W. Droogan, Westchester
 Carroll Dunham, Irvington
 Robert Condit Eddy, New Rochelle
 W. S. Fleming, Mt. Vernon
 N. H. Freeland, Tarrytown
 J. B. Fulton, Irvington
 John H. Furman, Tarrytown
 S. E. Getty, Yonkers
 J. T. Gibson, Yonkers
 Fred. R. Glover, Mt. Vernon
 Thomas F. Goodwin, Mt. Vernon
 William D. Grainger, Bronxville
 William F. Greene, Mt. Vernon
 Daniel M. Griffin, Portchester
 E. I. Harrington, Yonkers
 H. F. Hart, Shrub Oak
 William H. Helm, Sing Sing
 E. M. Hermance, Yonkers
 P. L. Hitchcock, Croton Falls
 Stephen F. Horton, Peekskill
 Robert T. Howe, Mt. Vernon
 Michael E. Hughes, White Plains
 H. K. Huntington, New Rochelle
 Robert T. Irvine, Sing Sing
 N. K. Jamal, Yonkers
 John P. Jeninsky, Mt. Vernon
 John H. Jenkin, Shrub Oak
 Louis Jeschinsky, Mt. Vernon
 David Johns, Yonkers
 Le Baron Jones, Pleasantville
 C. H. Judson, Dobbs Ferry
 John A. Knapp, Mt. Vernon
 Charles A. Knight, Peekskill
 Carl H. Kroeber, Yonkers
 C. C. Knight, Peekskill
 Stephen T. Leo, Yonkers
 Jacob J. Lewin, Port Chester
 Z. E. Lewis, New Rochelle
 John J. Linson, Tarrytown
 Frank B. Littlewood, New Rochelle
 D. C. Loewenstein, New Rochelle
 Francis R. Lyman, Hastings-on-Hudson
 E. De Mott Lyon, Peekskill
 George H. Magness, White Plains
 Charles Mason, Peekskill
 E. F. Matthews, Port Chester
 Thomas McCrossen, City Island
 W. J. McDermott, Westchester
 S. H. McIlroy, Morrisania
 B. W. McNichol, Westchester
 C. S. Mead, Port Chester
 Francis S. Merriam, Mt. Vernon
 Oscar H. Merrill, Mt. Vernon
 Charles A. Miles, Yonkers

W. N. Miller, Croton-on-Hudson
 W. A. Miner, Mt. Kisco
 A. J. Mixsell, Rye Neck
 Henry Moffatt, Yonkers
 E. M. Morrell, Yonkers
 Bernard E. Mulligan, Yonkers
 S. O. Myers, Mt. Vernon
 W. H. Neilson, New Rochelle
 Edward S. Newell, Mt. Vernon
 Charles W. Oakes, Williamsbridge
 Patrick W. O'Brien, Peekskill
 Carl Osterheld, Dobbs Ferry
 John Parsons, Kingsbridge
 Ralph Parsons, Sing Sing
 H. E. Patch, Chappaqua
 J. D. Patterson, Mt. Vernon
 John C. Pearson, Westchester
 George A. Peck, New Rochelle
 T. D. Pinckney, Williamsbridge
 J. L. Porteus, Yonkers
 P. H. Pyne, Yonkers
 C. M. Raymond, New Rochelle
 Charles Rich, Cornell
 Louis Root, Tarrytown
 Ben. Jerome Sands, Port Chester
 Norton Sands, Port Chester
 C. J. Schneider, Mt. Vernon
 H. E. Schmid, White Plains
 Emil Schoffen, Yonkers
 T. F. Sharkey, Mt. Vernon
 Frank W. Shipman, Mt. Vernon
 E. Shoelderfer, Yorktown
 Fred. H. Strong, Yonkers
 Edward F. Sheehan, Sing Sing
 G. H. Sherman, Yonkers
 Elizabeth C. Sleight, Mt. Vernon
 H. Eugene Smith, Mt. Vernon
 J. W. Smith, Tuckahoe
 Alex. O. Snowden, Peekskill
 Percy C. Snowden, Peekskill
 Oscar J. Stafford, Port Chester
 James A. Stewart, Tuckahoe
 William H. Stow, Cross River
 Samuel Swift, Yonkers
 E. B. Teft, New Rochelle
 John C. Todd, Tarrytown
 W. H. Todd, Dobbs Ferry
 Elmer Allen Travis, Mt. Vernon
 B. R. Tupper, Mt. Vernon
 Nathan P. Tyler, New Rochelle
 Nathan A. Warren, Yonkers
 G. C. Weiss, Mt. Vernon
 W. L. Wells, New Rochelle
 Julia St. John Wygant, Peekskill
 Number of Members, 157.

Deceased: C. E. Kimball, Mt. Vernon, November 28, 1895, æt. 32.

MEDICAL SOCIETY OF THE COUNTY OF WYOMING.

MEETING.—Annual, second Tuesday in June.

Members.

George M. Blackmore, Pike
 F. E. Bliss, Warsaw
 William M. Boddy, North Java
 E. G. Harding, Wyoming
 S. S. Kennedy, Varysburg
 Zera J. Lusk, Warsaw
 W. N. Martin, Cowlesville
 R. W. Miller, Castile

Samuel S. Miller, Java
 George Palmer, Jr., Warsaw
 Lucius Peck, Arcade
 Robert Rae, Portageville
 James P. Rathbun, Java
 D. W. Rodgers, Perry
 S. Chester Smith, Castile
 Horatio Spencer, Pike

Number of Members, 16.

MEDICAL SOCIETY OF THE COUNTY OF YATES.

MEETINGS.—Annual, first Tuesday in June; semi-annual, second Tuesday in January. Other meetings as directed by the Society.

Officers. (June, 1896.)

Chas. M. Van Dyke, *President.* M. H. McGovern, *Vice-President.*
 Albert Ellison, *Secretary.* John M. Maloney, *Treasurer.*

Censors: N. L. Lusk, J. M. Waddell, William A. Oliver.

Delegate to State Medical Society: Charles E. Doubleday.

Delegates to Medical Association of Central New York: M. H. McGovern,
 C. M. Van Dyke.

Members.

Marquis C. Babcock, Branchport
 G. W. Brundage, West Dresden
 Charles E. Doubleday, Penn Yan
 Albert Ellison, Benton Centre
 Cyrus C. Harvey, Dundee
 Byron B. Havens, Penn Yan
 Schuyler Lott, Bellona
 M. H. McGovern, Penn Yan
 John M. Maloney, Dundee

O. E. Newman, Potter Centre
 William Oliver, Penn Yan
 William A. Oliver, Penn Yan
 A. R. Otis, Dundee
 Nelson A. Sloan, Dresden
 E. S. Smith, Dresden
 C. M. Van Dyke, Himrods
 James M. Waddell, Penn Yan
 J. H. Wilkin, Rushville

Number of Members, 18.

INCORPORATED VOLUNTARY MEDICAL SOCIETIES.

(By-laws, Chapter 1, Section 2.)

MEDICAL ASSOCIATION OF NORTHERN NEW YORK.

(Organized 1872; incorporated 1889.)

Annual meeting, second Tuesday in October, at Malone.

Officers.

H. Furness, *President.*
 R. J. Wilding, *Secretary.*

F. Kinsley, *Vice-President.*
 T. Gay, *Treasurer.*

Trustees: B. F. Sherman, T. Gay, C. Skinner,
J. H. Smith, D. S. Kellogg, T. A. Pease.

Delegate to State Medical Society: H. Furness.

Members.

A. H. Allen, Gouverneur	D. S. Kellogg, Plattsburgh
F. A. Anderson, Massena	F. Kinsley, Peru
C. W. Arthur, Plattsburgh	A. M. Larkin, Norwood
A. W. Atwater, St. Regis Falls	E. A. La Rocque, Malone
C. B. Barber, Keeseville	J. H. La Rocque, Plattsburgh
C. C. Bartholomew, Ogdensburg	E. M. Lyon, Plattsburgh
J. O. A. Beaupre, Malone	G. C. Madill, Ogdensburg
R. Bestle, Burke	O. McFadden, Massena
F. H. Brewer, Madrid	J. G. McKinney, Schuyler Falls
E. H. Bridges, Ogdensburg	F. Madden, Plattsburgh
M. D. Briggs, Champlain	G. W. Major, Montreal, P. Q.
S. E. Brown, Ogdensburg	C. Marshall, Huntington, P. Q.
J. H. Brownlow, Ogdensburg	W. C. Mills, Chateaugay
J. H. Cameron, Brasher	T. B. Nichols, Plattsburgh
H. H. Carpenter, Lawrenceville	G. H. Oliver, Dickinson
M. S. Carpenter, Chateaugay	C. E. Pearl, North Bangor
S. B. Close, Gouverneur	T. A. Pease, Norwood
W. E. Clough, West Chazy	H. Poland, Westport
G. C. Cole, Potsdam	A. Proudfoot, Montreal, P. Q.
C. J. Crippen, Trout River	J. B. Ransom, Dannemora
P. F. Dalphin, Malone	J. Reynolds, Potsdam
W. S. Daly, Ogdensburg	J. J. Robinson, Ellenburgh
L. C. Dodge, Rouse's Point	H. C. Rockwood, Bombay
F. F. Drury, Gouverneur	R. S. Saville, Mineville
H. E. Dunton, Swanton	D. M. Sellec, Brier Hill
A. W. Fairbanks, Chazy	B. F. Sherman, Ogdensburg
J. Q. Flood, Hopkinton	J. C. Sherman, Ogdensburg
D. R. Freeman, Chazy	C. D. Silver, Chateaugay
H. Furness, Malone	C. Skinner, Malone
T. Gay, Malone	J. A. Smart, Fort Covington
J. A. Grant, Malone	J. H. Smith, Plattsburgh
W. R. Hanbridge, Ogdensburg	M. Smith, Heuvelton
W. H. Harwood, Chasm Falls	W. U. Taylor, Mooers
C. B. Hawley, Gouverneur	J. S. Van Vechten, Chateaugay
T. S. Haynes, La Cole, P. Q.	F. D. Whitehead, Burke
W. H. Hingston, Montreal, P. Q.	A. G. Wilding, Malone
O. A. Holcomb, Plattsburgh	R. J. Wilding, Malone
E. S. Howe, Saranac	P. M. Wise, Ogdensburg
G. Howe, Chateaugay	I. Wood, Black Brook
R. E. Hyde, Beekmantown	D. B. Woodward, Ellenburgh
J. R. Johnson, Bangor	Number of Members, 81.

ROCHESTER PATHOLOGICAL SOCIETY.

(Delegate admitted 1890.)

Officers.

H. S. Durand, *President.* W. B. Jones, *Vice-President.*
Wheelock Rider, *Secretary and Treasurer.*

Delegate to State Medical Society: T. Oliver Tait.

Honorary Members.

Azel Backus
William H. Briggs
T. A. Brown
D. R. Burrell

J. D. Dunning
W. S. Ely
B. L. Hovey
David Little

E. M. Moore
C. E. Rider
J. W. Whitbeck

Active Members.

F. D. Andrew
E. B. Angell
Ogden Backus
C. R. Barber
H. L. Beahan
C. M. Briggs
W. M. Brown
J. J. Burke
P. D. Carpenter
G. G. Carroll
M. S. Collier
C. G. Combs
W. L. Conklin
Archibald Dann
C. E. Darrow
C. A. Dewey
F. F. Dow
H. S. Durand
W. B. Ely
H. M. Fenno
W. H. Fox
L. T. Gandy
William S. Hall
Sumner Hayward

A. W. Henckell
W. J. Herriman
E. H. Howard
W. R. Howard
L. W. Howk
J. M. Ingersoll
I. T. Johnson
F. A. Jones
S. C. Jones
W. B. Jones
J. J. Kempe
S. W. Little
J. W. McCauley
F. A. Mandeville
J. W. Magill
D. G. Mason
R. M. Moore
E. W. Mulligan
R. H. Nettleton
T. A. O'Hare
Joseph Pease
E. B. Potter
B. I. Preston
Fred. Remington

Wheelock Rider
J. O. Roe
A. S. Rockwell
L. W. Rose
J. L. Rosebyom
T. D. Rupert
Q. C. Schuhart
Wallace Sibley
N. W. Soble
C. S. Starr
T. O. Tait
D. C. Throop
P. G. Udell
J. C. Urquhart
George Waldron
J. E. Weaver
L. A. Weigel
C. W. Wilbor
H. T. Williams
Benjamin Wilson
C. D. Wooden
C. D. Young
F. W. Zimmer
Number of Members, 82.

ELMIRA ACADEMY OF MEDICINE.

(Delegate admitted 1891.)

Officers.

George M. Case, *President.*
D. H. Reardon, *Secretary.*

F. W. Ross, *Vice-President.*
Hamilton D. Wey, *Treasurer.*

*Delegate to State Medical Society: G. V. R. Merrill.**Members.*

A. H. Baker
P. N. Barker
C. W. M. Brown
J. H. Brewster
P. S. Carpenter
George M. Case
R. R. Chilson
LaRue Colegrove
E. G. Drake
T. A. Dundas
John E. Eldred
F. Elliott
Henry Flood
H. H. Ford

F. B. Green
G. H. Gustin
Jonas Jacobs
C. G. R. Jennings
G. V. R. Merrill
John H. Nye
O. S. Nye
J. C. O'Brien
W. H. Olmsted
S. E. Palmer
R. B. Pratt
H. DeV. Pratt
M. R. Pritchard
D. H. Reardon

E. A. Reilly
F. H. S. Ritter
F. W. Ross
Cady Smith
C. L. Squire
N. H. Soble
W. D. Vedder
Sherman Voorhees
H. F. Webster
H. D. Wey
W. C. Wey
John C. Young
Number of Members, 40.

UTICA MEDICAL LIBRARY ASSOCIATION.

(Delegate admitted 1891.)

Officers.

C. S. Maxson, *President.* F. H. Brewer, *Vice-President.*
L. H. Jones, *Secretary and Librarian.* L. F. Pattengill, *Treasurer.*

Delegate to State Medical Society: D. C. Dye.

Members.

D. P. Allen	W. E. Ford	H. L. Palmer
Charles E. Atwood	Earl D. Fuller	W. B. Palmer
M. M. Bagg	W. C. Gibson	L. F. Pattengill
Smith Baker	W. M. Gibson	F. H. Peck
P. J. Barrett	J. H. Glass	William Powell
G. Alder Blumer	Joseph V. Haberer	H. S. Quin
W. H. Booth	W. J. Harrer	James Ross
F. H. Brewer	C. R. Hart	Charles P. Russell
A. J. Browne	A. L. Holden	W. J. Schuyler
W. H. Brownell	J. G. Hunt	George Seymour
W. A. Burgess	E. M. Hyland	H. E. Shumway
P. J. Campbell	H. G. Jones	A. R. Simmons
Mathias Cook	J. D. Jones	Hugh Sloan
J. B. Cook	L. H. Jones	C. E. Smith
C. W. Crumb	J. G. Kilbourn	William Stump
M. J. Davies	D. R. Kinloch	A. Walter Suiter
T. Deecke	William Mabon	J. Nelson Teeter
F. J. Douglass	W. R. Marsden	Charles B. Tefft
D. C. Dye	S. C. Maxson	Charles G. Ward
D. S. Eynon	F. M. Miller	W. E. Wetmore
T. M. Flandreau	H. C. Palmer	Number of Members, 59.

UTICA MEDICAL CLUB.

(Delegate admitted 1892.)

Officers.

D. C. Dye, *President.* C. R. Hart, *Vice-President.*
C. J. Campbell, *Secretary and Treasurer.*

Delegate to State Medical Society: W. E. Wetmore.

SOCIETY OF PHYSICIANS OF CANANDAIGUA.

(Delegate admitted 1892.)

Officers.

O. J. Hallenbeck, *President.* M. R. Carson, *Vice-President.*
H. C. Buell, *Secretary and Treasurer.*

A. L. Beahan, J. H. Jewett, H. C. Buell, *Directors for Three Years.*

Delegate to State Medical Society: O. J. Hallenbeck.

Members.

Albert L. Beahan
H. C. Buell
Dwight R. Buell
M. R. Carson

Edwin J. Gillett
Orlando J. Hallenbeck
John H. Jewett
F. E. McClellan

Number of Members, 8.

Honorary Members.

Robert L. Carson
Noah T. Clarke
Charles S. Hoyt

B. T. McDowell,
Henry Stewart
Charles A. Van der Beek

PRACTITIONERS' SOCIETY OF ROCHESTER.

(Delegate admitted 1898.)

Officers.

Sarah R. A. Dolley, *President.* Mary J. Slaight, *Vice-President.*
Harriet Turner, *Secretary and Treasurer.*

Delegate to State Medical Society: Evylin Baldwin.

Members.

(Where no town is mentioned Rochester is to be understood.)

Evylin Baldwin, 117 Jefferson av
Eveline P. Ballintine, Rochester State
Hospital
Alice Brownell, Newark, N. Y.
Ina Burke, 21 Park av
E. A. Cady-Harris, 280 Lake av
Anna Craig, 48 South Clinton
Sarah R. A. Dolley, 52 East av

Sarah H. Perry, 103 S. Fitzburgh st
Ida Porter, Monroe av
Marion Craig Potter, 48 S. Clinton st
Mary J. Slaight, 33 Chestnut st
Harriet N. Turner, 34 George st
Caroline White, 57 South av
Lettie H. Woodruff, 223 Plymouth av
Number of Members, 14.

SYRACUSE ACADEMY OF MEDICINE.

(Delegate admitted 1894.)

Officers.

Alfred Mercer, *President.* John Van Duyn, *Vice-President.*
T. H. Halsted, *Secretary.* Ely Van der Warker, *Vice-President.*
E. L. Mooney, *Treasurer.*

Delegate to State Medical Society: E. L. Mooney.

Resident Fellows.

Robert Aberdein
Frances A. Adams
Henry B. Allen
W. J. Ayling
Theresa Bannan
Henry C. Baum
J. A. Belch
Eugene C. Belknap

A. C. Benedict
C. H. Benson
O. A. Blumenthal
A. B. Breese
F. B. Brooks
U. H. Brown
F. H. Butler
W. A. Cahill

J. C. Carson
A. J. Campbell
O. F. Chadbourne
G. P. Clark
J. H. Coe
G. W. Cook
S. B. Craton
W. A. Curtin

A. J. Dallas	J. L. Jarvis	Scott Owen
C. N. Daman	F. J. Kaufmann	L. K. Peck
L. P. Deming	G. R. Kinne	W. T. Plant
A. E. DeMott	J. W. Knapp	G. M. Price
Henry D. Didama	I. H. Levy	A. B. Randall
F. O. Donohue	B. W. Loomis	C. H. Ransom
A. G. Doust	C. E. McClary	F. Reynolds
Gregory Doyle	T. F. McKenna	M. G. Rood
G. W. Draper	R. C. McLennan	C. S. Roberts
J. H. Drum	P. R. McMaster	J. C. Roth
T. B. Dwyer	P. F. McMorrow	F. J. Rupp
F. H. Engelhardt	C. M. Magee	Kate Hathaway Salmon
A. S. Edwards	F. W. Marlow	L. A. Saxer
George A. Edwards	W. H. May	F. W. Sears
H. L. Elsner	W. H. Maynard	John Shoudy
M. B. Fairchild	E. R. Maxson	F. W. Smith
F. S. Fay	E. S. Maxson	W. Manlius Smith
J. R. Flanigan	Alfred Mercer	S. F. Snow
J. W. Fry	A. C. Mercer	Margaret Stanton
W. H. Greis	A. B. Miller	F. H. Stephenson
Thomas H. Halsted	W. H. Mills	O. A. Thomas
Juliet E. Hanchett	J. J. Moore	D. M. Totman
R. C. Hanchett	B. S. Moore	A. F. Vadeboncoeur
F. L. Harter	E. L. Mooney	Ely Van der Warker
H. B. Hawley	N. L. Mulvey	John Van Duyn
A. D. Head	J. F. Munn	C. J. Walch
A. W. Hedden	D. H. Murray	L. F. Weaver
J. L. Heffron	W. M. Nelson	W. G. Werfelmann
W. G. Hinsdale	O. W. Oberlander	F. C. Williams
N. Jacobson		

Deceased : Jos. P. Dunlap, W. H. Dunlap, N. P. Warner.

Non-resident Fellows.

C. O. Baker, Auburn	Ira Harris, Fayetteville
W. S. Cheesman, Auburn	M. R. Joy, Cazenovia
S. E. Crane, Onondaga Valley	J. W. Knapp, Canastota
B. F. Chase, East Syracuse	A. W. Marsh, East Syracuse
George Ed. Clarke, Skaneateles	G. W. Miles, Oneida
D. Erway, East Syracuse	H. E. Richardson, East Syracuse
W. E. Ford, Utica	W. C. Todt, Oswego
Amelia S. Gilmour, Auburn	F. W. Slocum, Camillus
I. N. Goff, Cazenovia	H. P. Wilcox, Central Square
L. A. Hall, Fair Haven	A. A. Young, Newark

Number of Fellows, 134.

LONG ISLAND MEDICAL SOCIETY.

(Delegate admitted 1895.)

Officers.

John O. Polak, *President.* William H. Clowminzer, *Vice-President.*
Frederick C. Holden, *Secretary and Treasurer.*

Trustees : W. L. Rickard, Louis L. Nichols, John O. Polak, R. J. Morrison,
Fred. C. Holden, Arthur C. Brush, and W. H. Clowminzer.

Delegate to State Medical Society : John O. Polak.

Members.

Arthur H. Bogart
W. C. Braislin
Phillip A. Brennan
Arthur C. Brush
W. E. Butler
W. F. Campbell
James F. McCaw
J. M. Clayland
W. H. Clowminzer
E. E. Cornwall
Edward D. Ferris
James T. Gallagher
George R. Hawley

Edwin R. Hodgskin
Frederick C. Holden
George G. Holsten
H. N. Hoople
Henry T. Hotchkiss
Alexander C. Howe
C. D. Kevin
J. Richard Kevin
Charles J. Learch
James S. McNamara
Frank B. Milbury
R. J. Morrison

Archibald Murray
Charles G. Napier
Louis L. Nichols
N. L. North, Jr.
John O. Polak
Ralph H. Pomeroy
W. L. Rickard
W. C. Schoenijohn
Thomas B. Spence
W. H. Seymour
W. A. Tomes
A. S. Treadwell

Honorary Members.

Luzerne Coville
H. P. Dawe
Palmer Townsend

G. G. Ward, Jr.
James Wood

Number of Members, 42.

AMSTERDAM MEDICAL SOCIETY.

(Delegate admitted 1895.)

J. R. Fairbanks, *President.*

Edmund F. Bronk, *Vice-President.*

C. F. Timmerman, *Secretary and Treasurer.*

Delegate to State Medical Society: Daniel M. MacMartin.

MEDICAL ASSOCIATION OF THE CITY OF MT. VERNON AND ENVIRONS.

(Delegate admitted 1895.)

Officers.

Arch. T. Banning, *President.*

Frances E. Merriam, *Vice-President.*

G. C. Weiss, *Secretary.*

Clarence E. Kimball, *Treasurer.*

Frederick R. Glover, *Curator.*

Censors: C. W. Oakes, Arch. T. Banning, Clarence E. Kimball.

Delegate to State Medical Society: G. C. Weiss.

Members.

Arch. T. Banning
Frederick R. Glover
L. Jeschinsky
Clarence E. Kimball
Thomas McCrossen
G. H. Magness

Frances E. Merriam
C. W. Oakes
J. C. Pearson
George A. Peck
T. D. W. Pinckney
W. H. Pound

C. J. Schneider
Thomas F. Sharkey
O. J. Stafford
B. R. Tupper
G. C. Weiss
Number of Members, 17.

APPENDIX.

LAWS OF NEW YORK OF INTEREST TO THE MEDICAL PROFESSION ENACTED BY THE LEGISLATURE OF 1896.

AMENDMENT TO THE PUBLIC HEALTH LAW.

Section 145 of the Public Health Law [Chap. 661, Laws of 1898, Chap. 25 of the General Laws], that portion of it relating to the Practice of Medicine was amended so as to read as follows :

Chapter 3.

PRELIMINARY STUDY.

[The amended portion in *italics*.]

§ 145. ADMISSION TO EXAMINATION. The regents shall admit to examination any candidate who pays a fee of twenty-five dollars and submits satisfactory evidence, verified by oath, if required, that he: (1) Is more than twenty-one years of age; (2) is of good moral character; (3) has the general education required preliminary to receiving the degree of bachelor or doctor of medicine in this State; (4) has studied medicine not less than four full *school years of at least nine months each*, including four satisfactory courses of *at least six months each*, in four different calendar years in a medical school registered as maintaining at the time a satisfactory standard. *New York medical schools and New York medical students shall not be discriminated against by the registration of any medical school out of the State whose minimum graduation standard is less than that fixed by statute for New York medical schools.* The regents may, in their discretion, accept as the equivalent for any part of the third and fourth requirement evidence of five or more years' reputable practice, provided that such substitution be specified in the license; (5) has either received the degree of bachelor or doctor of medicine from some registered medical school or a diploma or license conferring full right to practice medicine in some foreign country. The degree of bachelor or doctor of medicine shall not be conferred in this State before the candidate has filed with the institution conferring it the certificate of the regents that *before beginning the first annual medical course counted toward the degree*, unless matriculated conditionally as hereinafter specified (three years before the date of the degree), he had either graduated from a registered college or satisfactorily completed a full course in a registered academy or high school; or had a preliminary education considered and accepted by the regents as fully equivalent; *or held a regents' med-*

ical student certificate, granted before this act took effect ; or had passed regents' examinations as hereinafter provided. A medical school may matriculate conditionally a student deficient in not more than one year's academic work or twelve counts of the preliminary education requirement, provided the name and deficiency of each student so matriculated be filed at the regents' office within three months after matriculation, and that the deficiency be made up before the student begins the second annual medical course counted toward the degree. Students who had matriculated in a New York medical school before June 5, 1890, and students who had matriculated in a New York medical school before May 13, 1895, as having entered before June 5, 1890, on the prescribed three years' study of medicine, shall be exempt from this preliminary education requirement.

A medical student certificate may be earned without notice to the regents of the conditional matriculation either before the student begins the second annual medical course counted toward the degree or two years before the date of the degree for matriculants in any registered medical school, in the four cases following :

1. For matriculants prior to May 9, 1893, for any twenty counts, allowing ten for the preliminaries, not including reading and writing ;
2. For matriculants prior to May 13, 1895, for arithmetic, elementary English, geography, spelling, United States history, English composition and physics, or any fifty counts, allowing fourteen for the preliminaries ;
3. For matriculants prior to January 1, 1896, for any twelve academic counts ;
4. For matriculants prior to January 1, 1897, for any twenty-four academic counts ;

But all matriculants, after January 1, 1897, must secure forty-eight academic counts, or their full equivalent, before beginning the first annual medical course counted toward the degree, unless admitted conditionally, as hereinbefore specified, when the deficiency must be made up before the student begins the second annual medical course counted toward the degree.

[This act took effect March 21, 1896, except that the increase in the required course of medical study from three to four years does not take effect till January 1, 1898, and does not apply to students who matriculated before that date and received the degree of M.D. before January 1, 1902.]

Various attempted amendments of the Practice of Medicine Law were defeated, especially one transferring the preliminary examination of medical students from the Board of Regents to the medical colleges ; also one to license certain individuals without passing examination before the State Board of Examiners.

A bill to incorporate an optical society and entitle its members to practice as opticians independently of a license to practice medicine was defeated.

A bill to abolish the office of coroner and providing for the appointment of medical examiners by the Appellate Division of the Supreme Court failed of passage, notwithstanding the earnest effort of the State Society Committee on Legislation, that of the Albany County Medical Society, and others in its behalf.

INDEX.

ABDOMINAL surgery, 156, 166, 171, 179, 187
Abscess of frontal sinus, 317
Albany, list of members of county of, 450
Albuminuria, functional, 404
Alcoholism and public health, 407
Allegany, list of members of county of, 458
Amsterdam Medical Society, list of members of, 536
Angell, Edward B., 155
Anniversary address, 57
Appendicitis, rare complication of, 166
Appendix, 537
Atrophy, muscular, 309

BISHOP, LOUIS FAUGÈRES, 402
Boldt, H. J., 198
Brain, surgery of, 116, 119, 135, 140, 145
 surgery in epilepsy, 145
 tumors, 119
Bristowe, A. T., 201
Broome, list of members of county of, 459
Browning, William, 309
Brush, E. F., 389
Bryant, Joseph D., 432
Bulkley, L. Duncan, 300, 401, 405, 426
By-laws, report of committee on, 27

CÆSAREAN section, improved, 171
Cancer cure institutions, 419
Cattaraugus, list of members of county of, 460
Cayuga, list of members of county of, 460
Chautauqua, list of members of county of, 461
Chemung, list of members of county of, 462
Chenango, list of members of county of, 463
Chipman, Erastus D., memorial of, 442
Clark, Gaylord P., 319
Clinton, list of members of county of, 464
Columbia, list of members of county of, 464
Collins, Joseph, 154

Committee of publication, report of, 53
Cortland, list of members of county of, 465
County Medical Societies, 457
 presidents of, 455

Craniotomy for idiocy and imbecility, 135
Crego, Floyd S., 154
Creveling, P. J., 317
Crockett, M. A., 304
Curtis, B. Farquhar, 202

DANA, CHARLES M., 135
Delaware, list of members of county of, 466
Delegates from county medical societies, 445
Dislocation of hip, 345
Drayton, H. S., 359, 382
Drinking-water and disease, 373
Dutchess, list of members of county of, 467

EAB, equilibrium function of, 319
Eclampsia, some remarks on, 209
Education, medical, of the future, 87
Elbow, dislocation of, 354
Eliot, Charles W., 87
Elliot, George T., 263
Elmira Academy of Medicine, list of members of, 532
Ely, W. S., 426
Epilepsy, brain surgery in, 145
 surgical treatment of, 140
Equilibrium function of the ear, 319
Erie, list of members of county of, 468
Essex, list of members of county of, 471
Etheridge, James H., 104

FORD, WILLIS E., 179, 202
Foster, Matthias Lanckton, 330
Fisher, Edward D., 116, 303
Fractures of patella, 432
Franklin, list of members of county of, 472
Fulton, list of members of county of, 472

GARRIGUES, HENRY J., 171
Gleason, D. A., 438
Goelet, A. H., 200, 243
Goffe, J. Riddle, 201
Grandin, Egbert H., 203
Green, Frank H., 440
Greene, list of members of county of, 473

HEFFRON, JOHN L., 383

Herkimer, list of members of county of, 474

Hip, dislocation of, 345

Honorary members, 454

Hopkins, Henry R., 407

Hysterical tetany, 280

INAUGURAL address, 11

Incorporated voluntary medical societies, 530

Indigestion of starchy food, 394

Idiocy and imbecility, craniotomy for, 135

Infantile spinal paralysis, 309

Infection in the newborn, 304

In memoriam, 437

Institutions, cancer cure, 419

Intestinal anastomosis, abdominal surgery requiring, 156

Intrauterine life, diseases of, 203

JACOBI, A., 308, 381, 388

Jacobson, Nathan, 419

Jefferson, list of members of county of, 475

Jewett, Charles, 217, 308

KIDNEY, tuberculosis of, 338

deficient excretion from, 104

Kings, list of members of county of, 476

Krauss, William C., 313

LAWS of New York of interest to the medical profession, 537

Lee, Dwight Morgan, biographical sketch of, 438

Legislation, report of committee on, 53

Lewis, list of members of county of, 481

Livingston, list of members of county of, 482

Long, Eli H., 404

Long Island Medical Society, list of members of, 535

Lungs, œdema of, 402

MACDONALD, W. G., 200

Madison, list of members of county of, 482

Malignant tumors in so-called cancer cure institutions, 419

Mann, Matthew D., 187, 199

Mason, William P., 373, 382

Mayer, Emil, 303

Medical Association of Northern New York, list of members of, 530

of the City of Mt. Vernon and Environs, list of members of, 536

Medical education of the future, 87

Medico-legal note, 427

- Members in attendance at annual meeting of 1896, 6
 ex-officio, 455
 permanent, 447
- Meyer, Willy, 338
- Minutes of ninetieth annual session, 11
- Monroe, list of members of county of, 483
- Montgomery, list of members of county of, 485
- Murray, Grace Peckham, 230
- Muscular atrophy, development of, 309
- Myers, T. Halsted, 345
- Mynter, Herman, 166
- NELSON, JUDSON C., memorial of, 440
- Nephrectomy, with some interesting features, 344
- Nervous manifestations of hereditary syphilis in early life, 298
- Neuritis complicating dislocation of shoulder and elbow, 354
- Newborn, infection in, 304
 syphilis in, 283
- New York Academy of Medicine, list of members of, 499
 laws of, 537
 list of members of county of, 486
- Niagara, list of members of county of, 507
- Nitroglycerin in the treatment of sciatica, 313
- Nomination, report of committee on, 45
- OBITUARIES, 438
- Edema of lungs, 402
- Officers, 1896, 445
 and committees, 5
 of society from its organization to present time, 443
- Oneida, list of members of county of, 508
- Onondaga, list of members of county of, 509
- Ontario, list of members of county of, 511
- Orange, list of members of county of, 512
- Organization, 1
- Orleans, list of members of county of, 513
- Oswego, list of members of county of, 513
- Otsego, list of members of county of, 514
- PARK, ROSWELL, 57
- Patella, fracture of, 432
- Pathology, study of, by comparative methods, 57
- Pernanganate of potassium in treatment of disease of skin, 405
- Persons eligible to membership, 456
- Pilcher, Lewis S., 381
- Pollution, river and stream, 360
- Practitioners' Society of Rochester, list of members of, 534
- President's inaugural address, report of committee on, 37

- Presidents of county medical societies, 455
 Prize essays, report of committee on, 28
 fund, report of, 52
 Puerperal self-infection, question of, 217
 Putnam, James W., 153
 Putnam, list of members of county of, 515
 Pylephlebitis suppurativa, 166

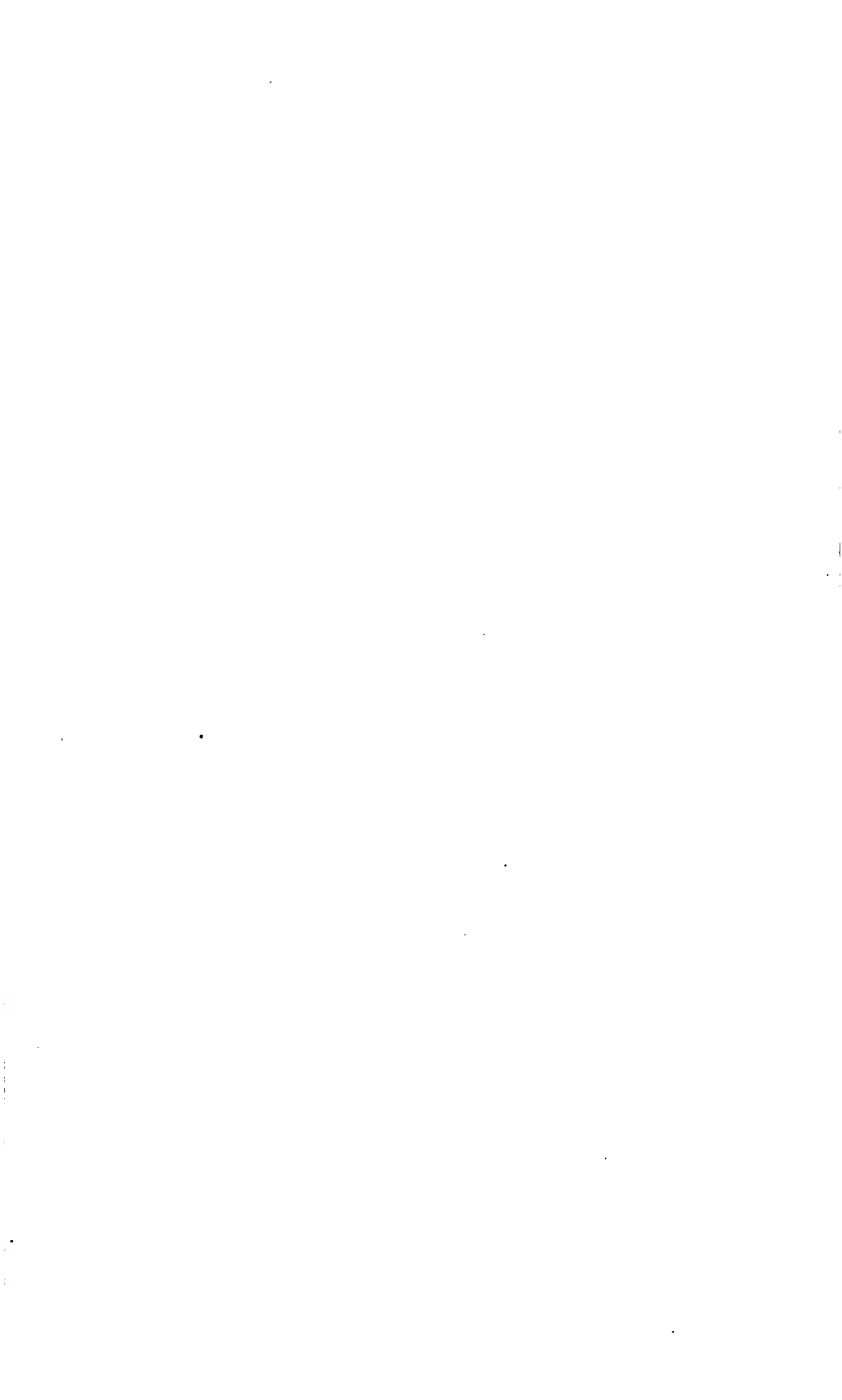
 QUEENS, list of members of county of, 516
 Question of puerperal self-infection, 217

 RENSSELAER, list of members of county of, 516
 Reports, 50
 Retro-deviations of uterus, 243
 Richmond, list of members of county of, 517
 River and stream pollution, how to prevent, 360
 Rochester Pathological Society, list of members of, 531
 Rockland, list of members of county of, 518

 SACHS, B., 140, 293
 Saratoga, list of members of county of, 519
 Satterthwaite, Thomas C., 360
 Schaffer, F. W., 426
 Schenectady, list of members of county of, 519
 Schoharie, list of members of county of, 520
 Schuyler, list of members of county of, 521
 Sciatica, treatment of, 313
 Seneca, list of members of county of, 521
 Serum-therapy, 390
 Shoulder, dislocation of, 354
 Sinus, frontal, abscess of, 317
 Skin, diseases of, 405
 Sloughing of uterine fibroids after abortion and labor, 187
 Society of Physicians of Canandaigua, list of members of, 533
 Starchy food, indigestion of, 394
 Starr, M. Allen, 119
 State Board of Medical Examiners, annual report of, 54
 Steuben, list of members of county of, 522
 St. Lawrence, list of members of county of, 518
 Suffolk, list of members of county of, 523
 Suiter, A. Walter, 427
 Sullivan, list of members of county of, 523
 Surgery, abdominal, 156, 166, 171, 179, 187
 cerebral, present status of, 116
 of the brain, 116, 119, 135, 140, 145
 Surgical treatment of backward displacements of uterus, 250
 treatment of epilepsy, 140

- Syphilis, early and latent, 300
 in children, early and late, 263
 in infants and young children, 263, 283, 293, 300
 in newborn, pathology of, 283
Syracuse Academy of Medicine, list of members of, 534
- TETANOID hysteria, 230
Tioga, list of members of county of, 524
Tompkins, list of members of county of, 525
Townsend, C. W., 344
Trachoma, some notes on, 330
Treasurer's report, 50
Tuberculosis of kidney, 338
 spread of, 383
Tumors, brain, 119
 malignant, 419
- ULSTER, list of members of county of, 525
Uræmia, some remarks on, 209
Uterine fibroids, sloughing of, 187
Uterus, backward displacements of, 250
 retro-deviations of, 243
Utica Medical Club, list of members of, 533
 Medical Library Association, list of members of, 533
- VAGINAL hysterectomy, 179
Vander Veer, A., 156, 203, 382
Van Peyma, P. W., 209
Veeder, M. A., 354
Vineberg, Hiram N., 250
- WARREN, list of members of county of, 526
Washington, list of members of county of, 526
Wayne, list of members of county of, 527
Wende, Ernest, 283
Westchester, list of members of county of, 528
Wilcox, Reynold W., 394
Wilson, E. H., 390
Women, diseases peculiar to, 104
Woolsey, George, 145
Wylie, W. Gill, 195
Wyoming, list of members of county of, 530
- YATES, list of members of county of, 530





169/12

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